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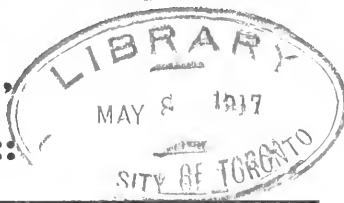
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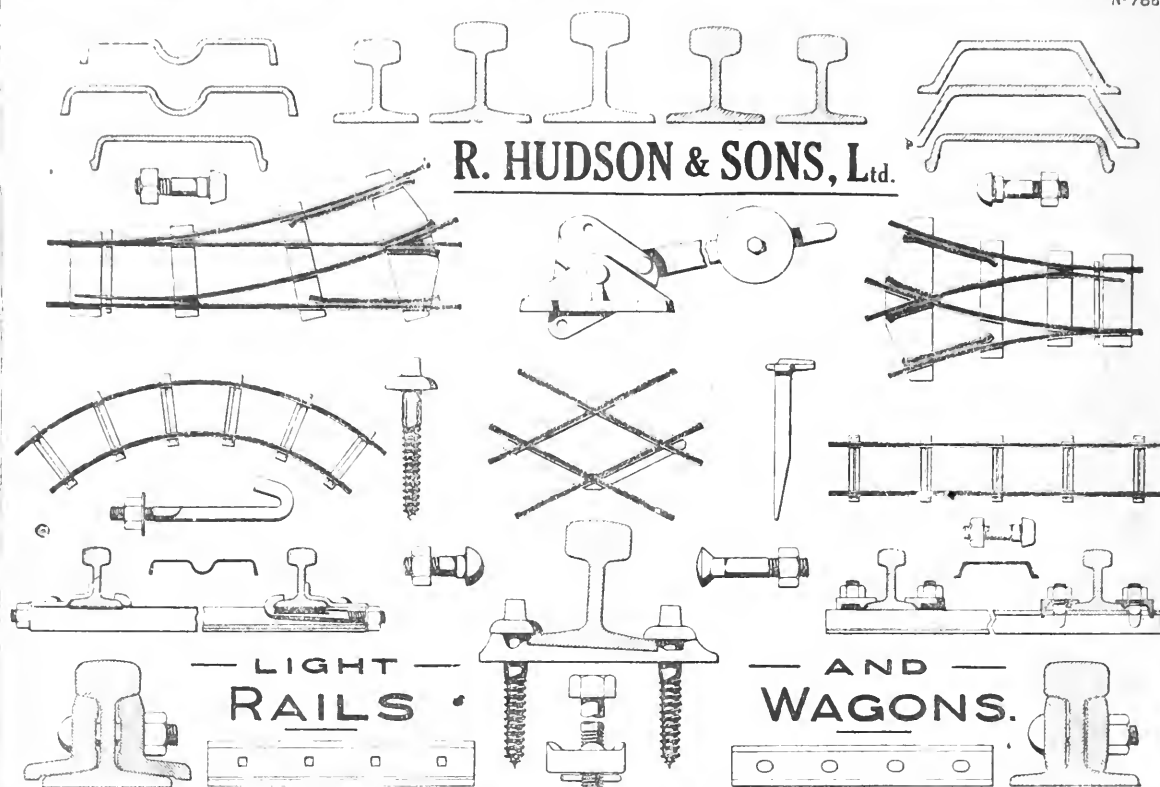
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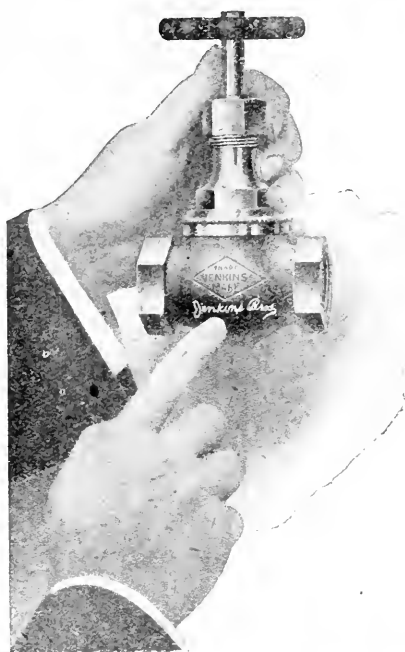
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## NOTICE TO SHAREHOLDERS.

NOTICE IS HEREBY GIVEN that the Eighteenth Ordinary General Meeting of Shareholders in the above Company will be held in the Board Room, Second Floor, "The Corner House," Johannesburg, on FRIDAY, the 25th DAY OF MAY, 1917, at 11.30 o'clock in the afternoon, for the following business:

1. To receive the Reports of the Directors and Auditors, and to consider the Balance Sheet for the year ended 31st December, 1916.
2. To confirm the appointment of Mr. W. S. Saunders as a Director in the place of Mr. A. S. Pearce, resigned. To elect two Directors in the place of Mr. W. H. Dyer and Mr. F. R. Lynch, who retire by rotation in terms of the Articles of Association, but are eligible and offer themselves for re-election.
3. To fix the remuneration for the past audit, and to appoint Auditors for the ensuing year.
4. To transact such other business as may be transacted at an Ordinary General Meeting.

AND NOTICE IS HEREBY ALSO GIVEN that immediately after the conclusion of the above-mentioned Ordinary General Meeting an Extraordinary General Meeting of the Shareholders of the Company will be held in the Board Room aforesaid, for the purpose of considering, and, if deemed advisable, passing, with or without modification or amendment, the subjoined Resolution which will be proposed:

1. That the articles of Association of the Company be altered in manner following:—

"In Article 13 the words and figures 'One Million Five Hundred Thousand Pounds (£1,500,000)' shall be substituted for the words and figures 'One Million Pounds (£1,000,000)', and that such Article as so altered shall read as follows:

"The Company in General Meeting convened for that purpose may by Resolution from time to time increase the Capital by the creation of new shares of such amount as may be deemed expedient. The Board of Directors may also from time to time increase the Capital of the Company by the creation of new shares of such amount as they may think fit, and may deal with, dispose of or issue such shares for such purposes and for such consideration and at such time or times as they may think fit; Provided, however, that the Board shall not have the power to increase the Capital beyond the sum of One Million Five Hundred Thousand Pounds (£1,500,000) Sterling without the sanction of an Extraordinary General Meeting of Shareholders."

AND NOTICE IS HEREBY ALSO GIVEN that a Further Extraordinary General Meeting of the Company will be held at the above-described Board Room on MONDAY, the 18th DAY OF JUNE, 1917, at the hour of 10.30 a.m., for the purpose of confirming, if thought fit, the foregoing Resolution as a Special Resolution.

The London Transfer Registers of the Company will be closed from the 17th April to the 21st April, 1917, and the Head Office Transfer Registers from the 21st May to the 8th June, 1917, all days inclusive.

Holders of Share Warrants to Bearer desirous of attending in person or by proxy, or of voting at any General Meetings Extraordinary General Meetings of the Company, shall produce their Share Warrants for verification, or may, at their option, deposit same as follows:

1. At the Head Office of the Company in Johannesburg at least twenty-four hours before the time appointed for the holding of the Meeting; or
2. At the London Office of the Company, 5, London Wall Buildings, E.C., at least thirty days before the date appointed for the holding of the Meeting.

Upon such production or deposit, Certificates, with Proxy Forms, will be issued, under which such Share Warrant Holders may attend the Meetings either in person or by proxy.

By Order of the Board,

THE CONSOLIDATED MINES SELECTION Co., Ltd. (Eng.)  
Secretaries,

Per A. F. Lyall.

Postal Address: P.O. Box 5657,  
Head Office, Second Floor, "The Corner House," Johannesburg,  
11th February, 1917.

# Brakpan Mines, Limited.

(Incorporated in the Transvaal.)

## NOTICE TO SHAREHOLDERS.

### Fourteenth Ordinary General Meeting.

NOTICE IS HEREBY GIVEN that the Fourteenth Ordinary General Meeting of Shareholders in the above Company will be held in the Board Room, Second Floor, "The Corner House," Johannesburg, on FRIDAY, the 25th DAY OF MAY, 1917, at 11 o'clock in the forenoon, for the following business:—

1. To receive the Reports of the Directors and Auditors, and to consider the Balance Sheet and Revenue and Expenditure Account for the year ended the 31st December, 1916.
2. To confirm the appointment of Mr. J. H. Gratton as a Director in the place of Mr. A. S. Pearce, resigned. To elect two Directors in the place of Messrs. H. S. Johnson Hall and F. R. Lynch, who retire by rotation in terms of the Articles of Association, but are eligible and offer themselves for re-election.
3. To fix the remuneration for the past audit, and to appoint Auditors for the ensuing year.
4. To transact such other business as may be transacted at an Ordinary General Meeting.

The London Transfer Registers of the Company will be closed from the 17th April to the 21st April, 1917, and the Head Office Transfer Registers from the 21st May to the 8th June, 1917, all days inclusive.

Holders of Share Warrants to Bearer wishing to be represented at the Meeting must deposit their Share Warrants, or may, at their option, produce same at the places and within the times following:—

- (a) At the Head Office of the Company in Johannesburg at least twenty-four hours before the time appointed for the holding of the meeting.
  - (b) At the London Office of the Company, 5, London Wall Buildings, E.C., at least thirty days before the date appointed for the holding of the meeting.
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Upon such production or deposit, Certificates, with Proxy Forms, will be issued, under which such Share Warrant Holders may attend the meeting either in person or by proxy.

By Order of the Board,

THE CONSOLIDATED MINES SELECTION Co., Ltd. (Eng.)  
Secretaries,  
Per A. F. Lyall.

Postal Address: P.O. Box 6249.

Head Office, Second Floor, "The Corner House," Johannesburg,  
11th February, 1917.

# The New Era Consolidated, Limited.

(Incorporated in the Transvaal.)

## NOTICE TO SHAREHOLDERS.

### Fifteenth Ordinary General Meeting.

NOTICE IS HEREBY GIVEN that the Fifteenth Ordinary General Meeting of Shareholders in the above Company will be held in the Board Room, Second Floor, "The Corner House," Johannesburg, on FRIDAY, the 25th DAY OF MAY, 1917, at 12.30 o'clock in the afternoon, for the following business:—

1. To receive the Reports of the Directors and Auditors, and to consider the Balance Sheet and Profit and Loss Account for the year ended 31st December, 1916.
2. To confirm the following appointments on the Board of the Company: Mr. J. H. Keegan, to fill the vacancy caused by the death of the late Major C. H. Mullins, V.C., C.M.G.; Mr. W. S. Saunders, in the place of Mr. A. S. Pearce, resigned.

To elect two Directors in the place of Mr. J. H. Keegan and Mr. R. Des Clayes, who retire by rotation in terms

of the Articles of Association, but are eligible and offer themselves for re-election.

3. To fix the remuneration of the Auditors for the past audit, and to appoint Auditors for the ensuing year.
4. To transact such other business as may be transacted at an Ordinary General Meeting.

The London Transfer Registers of the Company will be closed from the 17th April to the 21st April, 1917, and the Head Office Transfer Registers from the 21st May to the 8th June, 1917, all days inclusive.

By Order of the Board,

THE CONSOLIDATED MINES SELECTION Co., Ltd. (Eng.),  
Secretaries,

Per A. F. Lyall.

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### NOTICE TO SHAREHOLDERS.

#### Twenty-fifth Ordinary General Meeting.

NOTICE IS HEREBY GIVEN that the Twenty-fifth Ordinary General Meeting of Shareholders in the above Company will be held in the Board Room, Second Floor, "The Corner House," Johannesburg, on FRIDAY, the 25th DAY OF MAY, 1917, at 1.45 o'clock in the forenoon, for the following business:—

1. To receive the Reports of the Directors and Auditors, and to consider the Balance Sheet and Profit and Loss Account for the year ended 31st December, 1916.
2. To declare that Interim Dividends Nos. 33 and 34, amounting together to 27½ per cent., be the Dividend for the year 1916.
3. To confirm the appointment of Mr. J. H. Gratton, as a Director in the place of Mr. A. S. Pearce, resigned.  
To elect two Directors in the place of Messrs. F. G. C. E. Robellaz and C. Marx, who retire by rotation in terms of the Company's Articles of Association, but are eligible and offer themselves for re-election.
4. To fix the remuneration for the past audit, and to appoint Auditors for the ensuing year.
5. To transact such other business as may be transacted at an Ordinary General Meeting.

The London Transfer Registers of the Company will be closed from 17th April to the 21st April, 1917, and the Head Office Transfer Registers from the 21st May to the 8th June, 1917, all days inclusive.

Holders of Share Warrants to Bearer wishing to be represented at the meeting shall deposit their Share Warrants:—

- (a) At the Head Office of the Company in Johannesburg at least three clear days before the day appointed for the holding of the meeting.
- (b) At the London Office of the Company, 5, London Wall Buildings, E.C., at least thirty clear days before the day appointed for the holding of the meeting.

Together with such deposit, the holder of a Share Warrant shall lodge at the place of deposit a statement in writing giving his name and address and affirming that he is entitled to attend and vote at the meeting. A Certificate, with Proxy Form, will then be issued, under which such Share Warrant Holder may attend the meeting either in person or by proxy.

By Order of the Board,

THE CONSOLIDATED MINES SELECTION Co., Ltd. (Eng.),  
Secretaries,

Per A. F. Lyall.

Postal Address: P.O. Box 888.

Head Office: Second Floor, "The Corner House," Johannesburg.  
14th February, 1917.

## Daggafontein Mines, Limited.

(Incorporated in the Transvaal.)

### NOTICE TO SHAREHOLDERS.

#### Second Ordinary General Meeting.

NOTICE IS HEREBY GIVEN that the Second Ordinary General Meeting of Shareholders in the above Company will be held in the Board Room, Second Floor, "The Corner House," Johannesburg, on FRIDAY, the 25th DAY OF MAY, 1917, at 9 o'clock in the forenoon, for the following business:—

1. To receive the Reports of the Directors and Auditors, and to consider the Balance Sheet for the period ended 31st December, 1916.
2. To fix the remuneration of the Auditors for the past audit, and to appoint Auditors for the ensuing year.
3. To transact such other business as may be transacted at an Ordinary General Meeting.

The London Transfer Registers of the Company will be closed from the 17th April to the 21st April, 1917, and the Head Office Transfer Registers from the 21st May to the 8th June, 1917, all days inclusive.

By Order of the Board,

THE CONSOLIDATED MINES SELECTION Co., Ltd. (Eng.),  
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THE SOUTH AFRICAN

# Mining Journal,

WITH WHICH IS INCORPORATED

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## Notes and News.

We are authoritatively informed with reference to the bore hole put down by Mr. J. Dale Lacey on **The Spaarwater Strike.** Spaarwater, that the depth at which the reef was encountered was 2,520 feet. The width of the reef was 5 ft. 8 in., with a sandstone parting of 1 ft. 8 in. The assays detailed below might by some be regarded as in a measure disappointing. The lower portion was the more mineralised. It has long been recognised, of course, that borehole results are uncertain, and prove little beyond the depth and actual presence of the reef. The history of borehole results from the Modder B. is standing testimony to that fact. It may be recalled that nearly all the boreholes first put down on that property gave unpayable results, though actual development later proved it one of the world's richest gold mines. Mr. Dale Lacey's drilling on Spaarwater at any rate proves that the reef is present at a moderate depth on that large property, though it tells us little regarding its value. Messrs. Littlejohn & Whitby's assays are as follows:—

Batch Reg. No.	Cores.	Gold per Ton (2,000 lbs.)
1.	No. 7 8 in. Quartzite in Top	dwts. Traces
2.	No. 8 1½ in. Reef	Traces
3.	No. 9 5 in. Reef	24
4.	No. 10 2½ in. Reef	17
5.	No. 11 4½ in. Reef	20
6.	No. 12 1½ in. Contact Slates	10
7.	No. 13 2½ in. Footwall Slates	63
8.	No. 14 6½ in. Footwall Slates	17
Total .....		34½ inches.

The annual meetings of the subsidiary companies of the Consolidated Mines Selection group will be held in May, and the official **"C.M.S." Annual Meetings and Springs Increase of Capital.** notices to shareholders will be found in another part of this issue. In the case of the Springs Mines, it will be seen that an extraordinary general meeting will be held immediately after the ordinary meeting to consider an increase of capital from £1,000,000 to £1,500,000 by the creation of 500,000 new shares. The directors ask for this additional power so that they will be in a position to take advantage of any opportunity which may occur of extending the company's interests and operations, and have no intention of increasing the capital unless business of such a kind presents itself. "It is possible that opportunities of the nature indicated may arise in the not far distant future, and it is feared that the company will be unduly prejudiced if it is not able to take immediate advantage of such opportunities."

Two recent registrations of mining companies containing in their title the magic name of "Ophir" appear to have led to some confusion. The **The Two Ophir Mines.** Ophir Mines, Ltd., was registered recently in Pretoria as a Transvaal company, with a nominal capital of £200,000 and a working capital of £50,000. Its object is to work a property of 328 claims in the Klein Letaba district of the Transvaal. The directors are Messrs. J. Frank Brown, H. J. Ford and W. T. Hallimond. A few days later there was registered at Pretoria, as a foreign company, the New Ophir Mines, Ltd., with an issued capital of £30,000. This is a Capetown venture, fathered by Mr. C. A. Lagesson, and has been formed to work claims in the Eastern Transvaal. Apparently, the shares in the latter company are being hawked about among farmers in the Cape Colony, and the *S.A. Review* of Capetown has issued a strong condemnation of the methods of the canvassers concerned. Unfortunately, it seems to have been misled by the similarity of the titles into wrongly blaming the Transvaal company for the somewhat crude share-pushing methods of the Capetown enterprise.

Reuter is officially advised that during Mr. S. B. Joel's stay in Kimberley it was arranged amongst the principal diamond producers to form an insurance company in South Africa with a capital of two million pounds. The object of the company will be to carry on a general insurance business, but mainly the insurance of diamonds and gold, both from South Africa and from other countries. *Apocryphos* of the insurance of diamonds, a London correspondent writes—"Some diamond buying would, in any circumstances, be in progress were it not for the excessive rates charged by underwriters for insurance, which in themselves render it impracticable for merchants to ship. Many complaints are heard of the way in which diamond merchants have been and are being exploited for insurances, and this policy on the part of underwriters may in the long run prove the reverse of beneficial to them, as already some merchants do their own insurance." We hope to give further details at an early date.

A special general meeting of Vogel Deep shareholders has been called to consider the question of liquidation. The company belongs to the Neumann group, now about to change hands. The authorised capital is £299,900, in shares of £1 each; 259,896 shares are issued and fully paid. The company is a reconstruction of the Vogelstruis Deep, Ltd., and originally the capital was £365,750, while it was increased in 1895 to £400,000. In 1905, it was reduced to £196,500, being then increased to £420,000. In 1908, the capital was again reduced to £125,250, shareholders receiving one new share for every four old shares, and it was then increased to the present amount, 131,000 shares being offered to shareholders at par, in the proportion of one new for every three old shares held. The property consists of 556 claims with an area of 316 full claims, together with three water-rights. In 1895, 25 claims were disposed of to the Bantjes Consolidated Mines, Ltd., for 16,700 fully paid Bantjes shares. With a view to providing funds for an extensive scheme of development, an issue of debentures was made in 1910, but the subscriptions received were inadequate, and all work ceased as a consequence. In 1911 an attempt was made to dispose of the company's undertaking to the Roodepoort United Main Reef, but this scheme also had to be abandoned. There is a debenture issue redeemable in 1920. Milling was started early in 1910, but had to be suspended in the same year owing to the necessity for further development, and the payable ore reserves when operations ceased amounted to 134,630 tons value 5.92 dwts. over 37 inches South Reef, and 14,900 tons value 5.96 dwts. over 70 inches Main Reef.

The following have been appointed by the Minister of Mines as members of the Scientific and Technical Committee to investigate and advise with reference to industrial development in the Union: Biology, Mr. Burt-Davy; chemistry, Mr. L. Colquhoun and Prof. A. F. du T. Malherbe; mechanical engineering, Mr. Bernard Price; geology, Prof. Young; metallurgy, Mr. W. A. Caldicott; physics, Prof. J. C. Beattie; chemistry, Prof. B. de St. van den Reit. The President of the Royal Society of South Africa will be an *ex officio* member of the committee.

According to London advices, the situation as between the United States and Germany is still the predominating factor in the diamond market. A special diamond correspondent in New York in response to inquiries as to the position and outlook, cabled: "Business considerably slower owing uncertain situation; think decision would create reaction, followed by big boom." This sums up the diamond trade at the moment. The position of uncertainty reflects adversely on business; but, at the same time, there is no pressure to sell in any quarter, and it is understood that the Diamond Syndicate have executed one or two fair orders for America.

Speaking at the recent annual general meeting of the South African Gold Trust, Ltd., in London, Lord Harris said, *inter alia*:—"We have realised some 12,000 Sub Nigels to considerable advantage, the prospects of that company since then being much improved by the opening up of properties on the East Rand, and we have made up for that sale by a very satisfactory investment in Government Areas. We expect to receive suggestions for additions to the power plant on Sub Nigel, and hope that the information coming to hand as development progresses will justify an enlargement. The Shimmer Deep is showing up better and giving encouragement on its lower levels, which leads us to hope that the company may have much less difficulty than was apprehended in meeting its obligations." He remarked that it took Mr. Birkenruth six weeks to get to Capetown. He was detained for two weeks somewhere in the British Channel and for another week or so somewhere near the West Coast of Africa. Where he went then it was impossible to say, but he had arrived in South Africa, and he had already, in the very short time he had been there, done some extremely valuable work.

In order to stimulate interest in the question of prospecting for minerals, the *Bulawayo Chronicle* has suggested that the Rhodesian Geological Survey. Government might assist by utilising to a greater extent the services of the Geological Department. The Rhodesian Geological Department has carried out a great deal of good work, in spite of the extraordinarily small staff which is at the disposal of the Director. In point of fact the Geological Survey costs the country less than £3,000 a year. "In view of the importance of the mining industry and of geological research in connection therewith," says our contemporary, "this is a totally inadequate amount. If the country is to be surveyed on a proper scale and if the future of the mining industry is to be assured, an increase of the staff of this Department is imperatively needed, and we cordially concur in the appeal made by a correspondent to the elected members to press for an increase in the personnel at the ensuing session of the Legislative Council."

The secretary of the May Consolidated writes:—"I am directed to advise you that owing to further subsidences the quantity of ore available is insufficient to enable operations to be continued profitably. Work underground has been stopped, and it is anticipated that the mill, a portion of which is at present being kept running intermittently with ore obtained from the surface, will close down about the end of this month."

In the House of Assembly this week, in reply to Mr. Sampson, the Minister of Mines and Industries stated that the quantity of Protectorate diamonds for which tenders were asked was approximately 31,700 carats. One tender was for 46s. 6d. per carat, and the other 42s. 6d. with a half-share of the profits, which the tenderers guaranteed should not be less than 1s. per carat to the Government. The quantity sold under the agreement which has been entered into is 146,000 carats approximately, including the 31,700 mentioned, and extends to an output of 39,000 carats per month. The Government has concluded an agreement with the London Diamond Syndicate for the purchase of the Protectorate diamonds at a basic price of 46s. 6d., plus one-half share of the balance of the net profits above 10 per cent. resulting from the realisation of the stones. The prices are subject to revision every six months. In reply to a further question, the Minister said, *inter alia*, that the Government intends levying the German form of taxation, which provides for the Government receiving 66 per cent. of the amount realised for the diamonds less 70 per cent. for the cost of production.

As the report to be submitted at the meeting next Friday shows, the Wolhuter profit for the past year was £161,223, as compared with £153,011 for the preceding twelve months, and the tonnage milled showed an increase of 17,450 at 423,500. The value of the ore was 25s. 1d. per ton, as against 21s. 1d.; but this improvement of 9d. was almost entirely offset by a rise of 8d. in costs, and the per ton profit was thus only fractionally better. During the year 581,610 tons were developed and 472,733 tons mined, of which only 72 per cent. was taken from reserves. The result is that the total ore reserves have increased from 1,263,320 tons, averaging 5·8 dwts. over 53·2 in., to 1,302,160 tons, going 6 dwts. over 53·6 in. With the dividends declared (3s.) for the year the total distribution made by the company amounts to £1,008,500, and it is satisfactory to note from the consulting engineer's report that, "given a continuation of present conditions, as regards labour and stores, the mine should earn at least as great a profit during the coming year as during 1916." A London critic writes: "That the property is getting towards the end of its tether is shown by the fact that developments will be practically completed during 1918. The estimated "life," however, is six years, and, seeing that the waste now sorted underground is chiefly used for packing, the mining of pillars may add materially to the span of life. In any case, on the basis of last year's dividends, the shares at the current price yield over 31 per cent., which seems to offer a good margin for capital appreciation."

\* \* \* \* \*

The excellent position disclosed in the annual report of the Standard Bank as cabled from London last week draws attention to the sound banking position in the Union in general. A special correspondent of the London *Times* points out that the recent publication of the balance sheets of the various banks trading within the Union enables a comparative statement to be made which illustrates the effect of the war upon private finance within South Africa. It might have been expected that the application of so large a sum from the savings of the people to Government loan purposes would have found its reflex in the amount of fixed and floating deposits held by the banks, and of course this is the case. But the striking fact is that, although four and a half millions have been thus applied the volume of fixed and floating deposits still remains at an unprecedentedly high figure. On the eve of the war the total deposits held by the banks in South Africa amounted to £45,396,000. On September 30, 1916, they amounted to £53,000,000, of which about £29,000,000 was on floating deposit. In other words, banking deposits have increased since the war by 16½ per cent. This means that the private individual has been benefitting by the heavy loan expenditure on the war. The substantial increase in the ratio of floating deposits, which may be described as the free cash working capital of the country, would be in normal circumstances a thoroughly satisfactory symptom. At the present moment, however, it is more probably a sign of suspended development pending the settlement of the issues of the war. Incidentally, it suggests that there is still a good deal of accumulated wealth in South Africa which might be profitably applied in assisting the British Exchequer in the financial problems of the war. At the same time it cannot be said that the banks are following a niggardly policy with regard to their customers. Four years ago the proportion of advances made by the banks to their customers to total deposits stood at the extraordinarily high figure of 96 per cent., and this, in view of the coin necessarily held in reserve, compelled several of the banks to trench upon their capital to a fairly considerable extent. The ratio has since been gradually reduced, but still stands at 90 per cent., the advances totalling about 47½ millions. The returns bear remarkable evidence to the soundness of the commercial position in South Africa. Credit after two years of war is still extremely good, and though no doubt much of our well-being is based upon the large loan expenditure of the past two years, the banking indicates a degree of prosperity that few would have ventured to predict in August, 1914.

## TOPICS OF THE WEEK.

### INDUSTRIAL RESEARCH.

THE last issue of the *Union Government Gazette* contained an announcement that the Minister of Mines and Industries had appointed a number of gentlemen as members of the Scientific and Technical Committee to investigate and advise with reference to industrial development and research within the Union. A full list of the members is printed elsewhere in this issue. The only criticism we have to offer in regard to the personnel of the new Committee is that our two chief industries of mining and agriculture seem to be inadequately represented. Mining is not directly represented at all, and Mr. Burt-Davy is the sole direct representative of agricultural science. No doubt these omissions are explicable by the fact that both our leading industries are already fully catered for by special departments, manned by experts. The fact that chemistry is so well represented is doubtless to be explained by the action of the Government in nominating two professors of the science drawn from the older educational centres. The Committee, doubtless, is identical with the "Technical Board" recommended to the Minister of Mines and Industries by the Industrial Research Committee some time ago. The full list of recommendations then made, it may be opportune to recall, was as follows:—(1) That a separate Department of Industries and Commerce should be constituted in South Africa, one of its main functions being the furtherance of industrial research. (2) That a permanent head of this Department be appointed, with the necessary staff, and that, in addition to the Advisory Board already appointed by the Government, a Technical Board should be constituted, composed of scientific and technical men. That this Technical Board should direct the policy of the research section of the Department, and stand responsible for the scientific and technical soundness of projects recommended for Government support. That all proposals for research should stand referred to this Technical Board. (3) That one-half of the members of the Technical Board should be nominees of the Government of the Union, the other half being nominees of the scientific and technical institutions of South Africa. That all members of this Technical Board should be chosen for their scientific or technical experience in industries. (4) That the Technical Board should, in the first instance, comprise eight members, exclusive of the head of the Department, and should have power to refer sections of its work to sub-committees not necessarily composed of its own members. (5) That the Research Section of the Department should collaborate with similar institutions throughout the Empire, and, in addition to its other duties, should organise at once the carrying out of an economic survey of the resources of South Africa, and a scheme for industrial and scientific standardization. It must be remembered that the term research, as used in those recommendations, was intended to embrace a much wider field than usually covered by that term. The scope of the work contemplated is really that of industrial development, and includes, amongst others, the following important questions:—(1) The co-ordination, as far as possible, of all industrial research in South Africa, and the collection and dissemination of data bearing on the subject. (2) Co-operation with similar departments in the United Kingdom and the other Dominions to obtain information already available (including their practice and procedure), in order to avoid overlapping, and to take advantage of facilities for research not available in this country. An important feature would be the acquisition and utilisation in arts and manufactures of knowledge already existent elsewhere in countries more highly developed industrially than South Africa. How far the new Committee will adopt the original programme outlined in the foregoing remains to be seen. An official statement on the subject will, doubtless, be forthcoming at an early date. Meanwhile, we may be permitted to congratulate the Industrial Research Committee of the Rand scientific and technical societies on the measure of success that has thus attended their far-reaching and patriotic efforts.

## PROGRESS ON CENTRAL MINING/RAND MINES' SUBSIDIARIES.

### Points from the Quarterly Reports.

#### CITY DEEP.

The report of the directors of the City Deep, Ltd., for the quarter ended December 31, 1916, shows a development of 7,682 feet. The tonnage crushed was 182,500 tons, and the total yield 86,111 ozs., equalling 9.473 dwts. per ton milled. The working profit for the quarter was £167,581.

#### BANTJES CONSOLIDATED.

For the quarter ended December 31 the directors of Bantjes Consolidated Mines, Ltd., report a development of 1,191 feet, a crushing of 70,910 tons; yield 17,316 ozs., averaging 4.890 dwts. per ton. The ore reserve re-estimation for the year had been completed, and shows total reserves of 112,000 tons, of an average value of 5.6 dwts. Compared with the reserves at the end of 1915, this shows a total decrease of 236,000 tons. The leader shows an increase of 55,500 tons, the South Reef a decrease of 291,500 tons, the values being half a pennyweight lower in each reef. Regarding the Leader, the last quarterly report drew attention to the patchy character of this reef, now being opened up on a large scale for the first time, and advised that the quarterly information regarding tonnages and values developed was necessarily incomplete, and liable to material alteration at the annual revision of the ore reserves. This has unfortunately proved to be the case, and as the subsidiary development has not confirmed the values obtained in driving, the Leader ore reserves do not reflect the values previously given. The decreased tonnage in the South Reef is chiefly due to the transfer of tonnage previously included in the reserves to the unpayable category, the operations of the past year indicating their unpayability. It is also due to 120,000 tons being mined during the year from the South Reef ore reserves in excess of the payable tonnage developed in this reef. It has been apparent throughout the year that the yield was not coming up to the value called for by the reserves as at the end of 1915. This was referred to at the annual meeting as a disconcerting factor in the outlook, then thought to be only temporary. The tonnage mined from all sources during the past year exceeds the payable tonnage developed by 117,575 tons. The development footage for the quarter shows a reduction of 210 feet. The labour position at the moment is very serious, and interferes with the output considerably. To this is partly due the increased loss on the quarter's working from £151 for the September quarter to £3,290 for the quarter under review; but the greater part of this is due to a drop in yield of 1s. 1d. per ton. The re-opening of the remaining three compartments in the collapsed portion of the main incline shaft was nearing completion at the end of the quarter, and this work should be finished in the early part of the current quarter, at a total cost of about £2,600, the bulk of which expenditure was included in the costs under review. The net cash on hand at the close of the year amounts to nearly £30,000 when including the mine development suspense account.

#### DURBAN-ROODEPOORT DEEP.

The directors of the Durban-Roodepoort Deep report for the quarter ended 31st December, 1916, there was a development of 2,529 feet. The mills crushed 75,500 tons, yielding 24,984 ozs., an average of 6.618 dwts. per ton. Development operations for the period showed a decrease (291 feet) is anticipated. The reef exposures on the Main Reef were very similar to last quarter, but the South Reef gave lower results. The profits earned, though still low, were better, being 11d. per ton higher than for the previous quarter. The improvement in the grade indicated last quarter has been maintained, but unfortunately, owing to a shortage of native labour, the tonnage milled has dropped considerably, thus preventing full advantage from the improvement in values. The native labour position is affecting the output

quite seriously at the moment, and every endeavour is being made to increase numbers: the present indications to this end are hopeful. Shareholders were notified in the Press on the 15th December, 1916, that in consequence of the heavy expenditure which has to be met during 1917 on two underground winders, the Board decided not to pay any dividend for the half-year ending 31st December, 1916. It is estimated that a cash surplus of approximately £23,098 will be carried forward to the new year towards meeting this expenditure, this being approximately £7,722 more than was carried forward at the end of 1915.

#### CROWN MINES.

For the quarter ended 31st December, 1916, the directors of the Crown Mines, Ltd., report a development of 10,390 feet, a crushing of 591,000 tons, yielding 178,670 ozs., the average per ton being 6.016 ozs. An arrangement has been made with the Government carrying the right to mine under an area of 105.87 claims under certain water rights on the company's property. The consideration is fifteen annual instalments of £9,926, the first of which is due on 31st December, 1917. The expenditure on shaft sinking and equipment during the quarter amounted to £11,020. The native labour force at the end of the quarter was 13,700, as compared with 15,267 at the end of September, 1916. The working profit for the quarter was £222,722.

#### GELDENHUIS DEEP.

For the quarter ended 31st December, 1916, the directors of the Geldenhuis Deep, Ltd., report a development of 1,116 feet, a crushing of 180,000 tons, yielding 52,597 ozs., of an average value of 5.881 ozs. There was a working profit for the quarter of £11,780.

#### FERREIRA DEEP.

The directors' report for the last quarter of 1916 shows a development of 1,292 feet. The mills crushed 162,380 tons, yielding 67,885 ozs., average 8.361 dwts. A further decrease in development operations was exhibited for the quarter as faces became completed, the reef exposures remaining excellent. The No. 2 shaft re-organisation work is complete as far as it can be carried, before the arrival of certain indispensable electric machinery from England. The improvement on profits for the quarter (£22,480) is due both to an increase in yield of 11d. per ton and to an increase in the tonnage milled which allowed for a material reduction in the cost per ton; the total expenditure in the two periods being but little different. The labour position has not improved as was hoped, and there is at the moment a material shortage of natives which is affecting both tonnage and profits.

### An American Eulogy of British Methods.

In connection with the recent tenders for shells for the American Navy, the American firms whose prices compared so unfavourably with those submitted by the firm of Hadfields, Limited, have come in for severe verbal chastisement at the hands of Mr. Daniels (Secretary of the American Navy), who, according to reports received, used language amounting to a denunciation of the American shell-makers for "putting profits before patriotism." Following on a warm eulogy of British workmanship, prices, and all-round efficiency, Mr. Daniels remarked that makers in the States had not kept pace with this country in quality, promptness of manufacture, or prices. Out of thirty-four 14in. shells submitted by the Bethlehem Steel Company for test, three passed a percentage of 8.8. The Crucible Steel Company managed to get 37.7 per cent. of the sample of shells submitted passed, and the Midvale Company, which apparently showed more enterprise and real desire to bring up the standard than the others, passed 73 per cent. Of the shells submitted by Hadfields, Limited, not a single one failed to meet all the requirements. If an English firm thus could compete during the war, what sort of time awaited the United States when the war was ended, and competition was once again in force?



## SOME PROBLEMS IN SOUTH AFRICAN GEOLOGY.

Anniversary Address by the President of the Geological Society of South Africa.

[By PERCY A. WAGNER.]\*

WHILE engaged in deciding upon an appropriate subject for my anniversary address, it occurred to me that it might be interesting and useful to discuss in the light of newer investigations a few of the problems that, in the past, have greatly exercised the minds of South African geologists. From the numerous subjects that at once suggested themselves I accordingly chose the following, and propose this evening to deal with them in order of enumeration: (1) The Problem of the Auriferous Conglomerates of the Witwatersrand. (2) The Genesis of the Diamond. (3) Is the Diamond susceptible of alteration under the influence of the agencies operative or specially active at or near the earth's surface. (4) The Salt Pan on the farm Zoutpan, No. 467, north-north-west of Pretoria.

*The Problem of the Auriferous Conglomerates of the Witwatersrand.*—The problem of the auriferous conglomerates of the Witwatersrand, a subject concerning which it was fondly imagined years ago that the last word had been said, has been brought prominently to the notice of geologists during the past twelve months by an extraordinarily valuable paper from the pen of Dr. E. T. Mellor, in which "the great riddle of modern economic geology" is dealt with, in an illuminating manner, from the point of view of the practical field geologist. In regard to the main point at issue, namely, the origin of the gold, Dr. Mellor may be said, by the common consent of most geologists competent to form a judgment, to have finally placed beyond dispute the correctness of the "placer" theory, according to which the gold is of detrital origin, or, in other words, an original constituent of the conglomerates. It is difficult to over-estimate the service he has thereby rendered the mining industry, and his masterly treatment of this particular subject will, in my opinion, always rank as the greatest of his many notable achievements in connection with the geological survey of the Witwatersrand. Dr. Mellor bases his arguments mainly on the features presented by the Main Reef Leader, as developed on the Far East Rand, and I think that all geologists who have visited any of the mines of that area will admit that the correspondence there everywhere apparent between the occurrence of the gold and purely sedimentary features in the conglomerates, in which it is found, is truly remarkable. The admirable "reef" exposures in the neighbourhood of the south-eastern shaft of the Government Mining Areas, for example, which I recently had an opportunity of examining, not only afford clear proof that the gold must have been deposited contemporaneously with the pebbles, but also of the fact that, in this area at any rate, there has been no appreciable migration or redistribution of the metal, except possibly along joints and fissures traversing the banket. In the section of the mine under discussion the "reef" is characterised by the frequent occurrence of large pebbles, up to five inches in diameter, in nests or layers, and more rarely as isolated individuals. The large pebbles occur sometimes on the footwall, sometimes in a layer of conglomerate occupying a position midway between hanging and footwall, but also quite frequently right in the hanging wall, it being by no means uncommon to find the largest pebbles in the uppermost section of the reef. At some points both the hanging wall and the footwall leaders carry large pebbles. Now it has been clearly established by sampling that high, and in many instances unusual, assay values, are invariably associated with these large pebbles, no matter whether they occur at the bottom, middle, or top of the "reef"; so that it is possible from the appearance of the banket to form a very good idea of its gold contents. Had any appreciable migration of gold taken place this could not conceivably be the case. As the particles and crystals of gold occurring in the banket show no signs of attrition, but are similar in every respect to those occurring in quartz veins and other undoubted epigenetic deposits, it is clear that the grains and scales of the metal originally deposited in the gravels, now represented by the banket beds, must in this locality have undergone recrystallisation *in situ*.

The problem of the origin of the pyrite, with which the gold is so intimately associated in the conglomerates, cannot as yet be said to have been finally solved. While it is clear that the bulk of the mineral must have resulted from the alteration of grains of magnetite and other iron ores, present in the original gravel beds, there is still a good deal of uncertainty as to the source of the sulphur and the conditions under which the pyritisation took place. Much light has, however, been thrown on these vexed questions by Professor R. B. Young in his admirable book, "The Banket," to be shortly published, the manuscript of which I have been privileged to read. In a most interesting chapter on "The History of the Banket," he shows that there are excellent grounds for believing that the complicated mineral changes that have taken place in that rock included the following: (1) Solution and reprecipitation of the gold. (2) Conversion of the detrital iron oxides into pyrite by sulphuretted waters, this process being accompanied in the case of the ilmenite by the formation of rutile. (3) Solution and reprecipitation of portion of the pyrite. (4) Formation of chloritoid, sericite and chlorite at the expense of argillaceous and feldspathic material present in the matrix. (5) Addition of metallic sulphides, chlorite, sericite, calcite and carbonaceous matter from dykes during their cooling and subsequent

alteration. All of the above, excepting (2), were attended by a certain amount of replacement of quartz. The intimate association of gold and pyrite is accounted for on the assumption that, to some extent, (1) was contemporaneous with (2) and (3). Only in respect of certain unusually rich patches of banket—where there is transparent evidence of metasomatic replacement—does it appear probable that gold and pyrite were introduced by solutions after the cementation of the rock. With regard to the manner in which the banket beds were laid down, geologists are still very far from being unanimous. Dr. Mellor, as a result of his detailed investigations, has been led to the belief that the two principal gold carriers on the Witwatersrand, the Main Reef Leader and the South Reef, were deposited through the agency of violent floods in an extensive deltaic area, either upon its outer fringe or within the delta itself. With all due deference to its distinguished originator, I must confess that this hypothesis, that assumes that, on at least three distinct occasions during the laying down of the Witwatersrand beds, enormous deposits composed almost exclusively of well rounded pebbles, of fairly uniform size and composition, accumulated in the lower reaches of a large continental river or in the upper portions of its delta until great floods spread the pebbles—as well as some thousands of tons of alluvial gold in the case of the two reefs named—with almost uncanny uniformity over an area, probably exceeding 800 square miles in extent, appears to me to make so great a demand on the imagination that, even if no evidence against Dr. Mellor's views was available, I should find great difficulty in accepting them. There are, however, quite a number of serious objections to the theory on purely geological grounds, to some of which Professor Young has already called attention.

In the first place, if the Main Reef Leader and South Reef had been laid down by the agency of floods, we should expect to find in the direction in which the water is supposed to have moved—which, according to Mellor, was from N.W. to S.S.E.—a steady decrease in the average thickness of the conglomerate beds and in the dimensions of their constituent pebbles. As a matter of fact, however, it is only on the south-eastern fringe of the Far East Rand that any marked decrease is noticeable both in the thickness of the conglomerates and in the size of their pebbles, and even here it is not consistent. Thus in the south-western section of the Sub Nigel Mine reef widths of up to nine feet have been encountered, and in the old Molyneux Mine, situated to the south-west of Heidelberg, large pebbles were of quite common occurrence. Dr. Mellor would, I think, find great difficulty in naming a single mine in which sampling operations have disclosed a consistent decrease in the thickness of the conglomerate beds from N.W. to S.S.E., while, as regards pebbles, it is a matter of common knowledge that patches of conglomerate characterised by containing large pebbles, and individual pebbles of very large size, are throughout the Rand scattered quite haphazard through the more normal banket. I was greatly struck, when examining the magnificent "reef" exposures in the neighbourhood of the south-eastern shaft of the Government Mining Areas, by the variations that occur there, in a comparatively short distance, in the dimensions of the pebbles of a given layer of conglomerate. Proceeding in a southerly or south-south-easterly direction the average diameter of the pebbles in the footwall leader of the reef was in several instances found, within a distance of 100 feet, to increase from less than half an inch to almost two and a half inches. In the hanging wall leader, a similar increase was at one point noted in an even shorter distance. Had the conglomerates, as suggested by Dr. Mellor, been laid down by a "broad but comparatively uniform current over an extensive area of almost uniform level," such variations could not possibly occur. They are, on the other hand, what one would naturally expect to find in the case of beach gravels.

In the second place there is the evidence afforded by the Main Reef. This has frequently the character of a typical beach placer deposit, and its origin, as Dr. Mellor himself points out, may very well be due to the concentration of gravel plain deposits by wave action. In certain mines, such as the Knight Central, near Germiston, there are to be seen in the drives and workings on this "reef," all gradations between isolated lenses of banket, sometimes only a few feet in diameter, and very extensive areas of conglomerate, in which the Main Reef, as regards persistence and general characters, presents precisely the same features as the Main Reef Leader in the more favoured sections of the Rand. Exactly the same applies to the Kimberley Reef series of conglomerates—obviously shore deposits—in which occur individual bands of pebbles persistent over a mile or more. To postulate a special mode of deposition for the Main Reef Leader and South Reef on the more ground of their great persistence is thus hardly justifiable. Then, again, the Main Reef Leader itself, as developed on the Central Rand and also in some mines on the Far East Rand, is not a solid body of conglomerate, but, like the Main and South Reefs, is split up by attenuated lenses of quartzite into a number of distinct layers, that sooner or later unite, but none the less frequently preserve their individuality over considerable distances. In some instances the conglomerate bands, though consisting of but a single layer of pebbles, are very persistent, and the quartzite intercalations frequently of considerable areal extent and of remarkably uniform thickness. These features appear to me to be rather difficult to reconcile with the deposition of the "reef," under discussion, by

\* From the Transactions of the Geological Society of S.A.



the agency of a violent flood. Then there is the composition of the conglomerates. This is certainly more typical of marine gravels and shingles, from which, as a result of the milling action of waves and currents, the soft material has been largely eliminated while the hard pebbles are for the most part well rounded and worn, than of the deposits of a great river subject to periodic floods, which are characterised above all by the indiscriminate commingling of angular and rounded pebbles and boulders of hard and soft rocks and minerals. It may, of course, be urged that the elimination of the soft material and the round of the hard might equally well have been brought about by a lengthy transport of the pebbles by the river or rivers, that are assumed to have been responsible for the formation of the deposits. Against this, however, we have the testimony of Professor Young that the shapes of a large proportion of the pebbles are such as are typical of marine shingles and not of river gravels. In this connection reference may also be made to the peculiar occurrence in a drive on the 10th level of the Ferreira Deep Mine, described by Young. Here the Main Reef Leader is seen to bulge abruptly into the foot wall, presenting on each side of the drive the appearance of a contemporaneously eroded channel. The conglomerate forming this bulge is characterised by being very rich in pebbles of sericite and chloritoid schist. Professor Young rightly asks why, if soft schist pebbles could be carried out in large numbers to this position, they were not deposited in noticeable numbers among the vein quartz and other hard pebbles by the flood that Dr. Mellor pictures.

Finally, there is the imbrication or shingling of the pebbles of the conglomerate beds. I have paid particular attention to this on

my visits to various mines, and can fully endorse the statement of Becker that the arrangement of the pebbles is not one of regular shingling—as would have been the case had the conglomerates been laid down in the manner suggested by Mellor—but of “capricious imbrication” such as one finds in beach gravels. All these facts appear to me to point unmistakably to the conclusion that the conglomerates of the Main Reef zone are all of the nature of marine shore deposits, and I am inclined to agree with Young that they owe their origin to the working over by waves and currents on a subsiding littoral of extensive accumulations of confusedly bedded gravel and pebbly sand. In the “scattered bodies of very variable conglomerate” and the great lenticular masses of pebbly grit, etc., exposed below the Main Reef Leader in quite a number of mines on the East Central Rand and the East Rand, and in the occurrence in the Ferreira Deep mine above referred to, we have in all probability actual remnants of these deposits. On the supposition that the subsidence of the littoral proceeded spasmodically, so that extensive areas of gravel were subjected simultaneously to the action of waves and shore currents, the persistence of the individual beds of banket can readily be accounted for. The confusedly stratified gravels and sands from which the sheets of shingle, now represented by the banket beds, were formed, may very well have been laid down, in the manner suggested by Dr. Mellor, in an extensive deltaic area, of almost uniform level, by one or more continental rivers, for on any other view it would be extremely difficult to explain the character of the whole succession of strata of the upper Witwatersrand System.

(To be continued.)

## Correspondence and Discussion.

**Comments on Questions Arising in Technical Practice or Suggested by Articles in the Journal—Views, Suggestions and Experiences of Readers.**

### Clay for Tamping Purposes.

To the Editor, *South African Mining Journal*.

Sir,—From the commencement of the war the mines as a whole have been practising economy and have shown themselves more or less anxious to try any devices that would help to relieve the pressure upon supplies that are directly or indirectly imported. Some few days ago there was an article in the papers with reference to economies in the direction of explosives by using the lower explosives, etc. As the matter is of considerable magnitude and even a small saving by each miner on explosives used would mount up considerably, I venture to bring to your notice certain experience gained by myself in blasting. Having experience both on the mines and latterly in my own business in fireclay working, where the clay is a hard shale and has to be brought down by blasting, I have found that when a hole is tamped with sticks of moderately soft but plastic clay, in place of the usual papers made up with mine sand, a much heavier explosion is caused, and that if some soft material is first put into the hole and then the clay with a little mine sand is rammed in, the increase in the tearing action of the explosion is marked. I believe that clay is being used to a limited extent at present, but that it is not in general use, probably because the advantages of its use are not known sufficiently. If through the valuable medium of your paper the advantages of using clay were made public possibly the experience of others with more knowledge might be induced to give their opinion. Should those in authority on any of the mines care to make trials, I should be pleased to supply a limited amount of clay of the requisite plasticity and properly expressed into suitable sticks of, say, 1½ in. to 1¼ in. diameter by 10 in. long, if the gentlemen wishing to try its use will communicate with me, for which purpose I enclose my card.—Yours, etc.,

A. O. PITTAR.

Boksburg.

March 22nd, 1917

### British and Foreign Sailors' Society.

To the Editor, *South African Mining Journal*.

Sir,—With the aid of the local authorities, the British and Foreign Sailors' Society provided for all the men who were rescued (off the north-east coast of Ireland) from the torpedoed “Laurentic” and many of their relatives who came from a distance. A few wounded who are still in hospital are visited daily by local ladies as well as by the Port Missionary of the Sailors' Society. To convey the bodies of those whose relatives wished to remove them to their homes but lacked the means, this Society also provided hearses.—Yours, etc.,

SYDNEY LAMB,  
Assistant Secretary.

The Sailors' Palace,  
678 and 680, Commercial Road,  
London, E., 9th February, 1917.

### S.W. Diamond Fields.

The returns from the diggings in the South-Western Transvaal for the month of February show a total of 3,679½ carats value £21,911 5s., as compared with 3,449½ carats value £22,017 13s. in January. The chief contributing areas were as follows:—

	Carats.	Value.
Kameelkuil ... ..	826½	£1,702 0 0
London ... ..	507½	3,268 12 6
Bloemhof ... ..	316	1,787 10 0
Dievedraai ... ..	164½	1,233 5 0
Italie ... ..	210	1,177 10 0
Schweizer-Reneke ...	134½	863 8 6
Mimosa ... ..	151	740 0 0
Klipkuil ... ..	132½	731 10 0
Christiana ... ..	116	684 12 0
Plessisdam ... ..	136½	618 2 6
Krommelenboog ...	66½	570 5 0
Goedehoop ... ..	65½	512 10 0
Doornbult ... ..	25½	451 10 0
Koppiesvlei ... ..	71½	419 0 0

## HYDRAULIC TIN MINING IN SWAZILAND.

[By J. JERVIS GARRARD, M.I.M.M.]

THE Mineral Concessions now belonging to the Swaziland Tin, Ltd., comprise an area of some 54,190 acres situated in the hilly country in the North-Western corner of Swaziland, which is the only portion of that country in which minerals of value (with the exception of coal) have hitherto been discovered. The township of Mbabane, which is the capital of the country and seat of government, lies almost in the centre of the property, and is about ninety miles by road from Carolina in the Transvaal and about ninety miles from Goba, the terminus of the Portuguese Railway from Lourenço Marques to the Swaziland border, which railway was built with the intention of being eventually extended through Swaziland to connect with the Transvaal railway system near Breyten, and so form the most direct route from the coast to the Rand.

**Geological.**—Geologically the formation with which these alluvial deposits are associated is the older granite of the Eastern Transvaal. This rock where exposed as bedrock in various workings is found to be intersected by innumerable veins of pegmatite, quartz veins, and occasional basic dykes of more recent origin. The cassiterite undoubtedly owes its origin to the pegmatite veins and quartz veins, which in the order given represent the latest stages of consolidation of the granite magma. That this is so is evidenced by the fact that in one working known as Sanders Creek a big pegmatite vein occurred sufficiently decomposed to be capable of removal by hydraulic mining, and a considerable amount of cassiterite was recovered from this operation. Tin can be actually seen in thin pegmatites at Rowley and Stable Creeks, in veins varying from two to eight feet in width, and the author has also seen some big tin crystals embedded in pegmatite taken from a similar formation some ten miles away. It may therefore be assumed that these tin deposits represent the effect of a natural concentration of the heavy constituents from the gradual degradation of the pegmatite veins in the granite, and along the numerous water-courses of this vicinity, where true alluvial deposits have been formed; whilst up the slopes of these valleys in places are found thinner deposits containing sharp-edged alluvial tin. The alluvial deposit proper consists generally of from 6 to 25 ft. of soft overburden, containing little tin, resting on from 6 in. to 3 ft. of coarse tin-bearing gravel, which in some places is associated with large boulders, the whole resting on the bedrock of granite which, as a rule, is much decomposed—so much so, in places, that not less than a foot of it becomes removed in the process of washing down the tin-bearing gravel to the elevating sumps. Accessory minerals found in these gravels are ilmenite, monazite, euxenite, corundum, and tourmaline. Incidentally, a number of stone implements and arrow-heads have also been recovered. Cassiterite crystals, as large as two inches across, have been met with in some of the higher-lying Hill Creeks, but the average size of grain of the bulk of the tin recovered from the "Flats" is probably less than one millimetre.

**Historical.**—The four concessions under which this property is held were granted by King Umbandine of Swaziland in the year 1887. Little work of a serious nature was undertaken before the formation of this company in 1905. In the early stages of the company's existence work was almost entirely done on the "tribute" system, the tributors being paid so much per ton of concentrate landed in by them. In July, 1906, the company took over the working of the mine on its own account, the method of operation consisting of ground sluicing, and the excavation of gravel by hand and sluicing it in small 16ft. sluice boxes. This method was followed exclusively until 1908, when the company introduced hydraulic monitors. These were, however, only used for the removal of overburden, and the tin-bearing gravel was still excavated by hand and sluiced in the small boxes until 1911, when Mr. Douglas Osborne recommended the abandonment of existing methods and the introduction of hydraulic elevators to enable the deeper ground to be worked. It will be understood from the nature of the method of working how costly the production of concentrate up to this point must have been. Furthermore, owing to the impossibility of working ground below water level, the early miners contented themselves by working what they could, down to water level, and consequently left behind them a legacy of tailings covering up ground which succeeding workers have had to contend against. In other words, to-day, in almost every working, the company is faced with having to re-work ground partially worked previously, too good to leave alone, and yet robbed of its primeval attraction through bad work in past years. In 1912, the author was appointed consulting engineer, and whilst recognising the immense improvements brought about by the recommendation of Mr. Osborne, decided that even better use of the water supply could be made by utilising the large amount of power then running to waste over the Mbabane Falls, making the waste power do the elevating by means of gravel pumps, and setting free so much more water for breaking ground. This scheme was brought into operation in July, 1913, and it is not too much to say that, but for it, the mines would have had to close down two years ago.

**Physical Features.**—The various workings may be classified as follows:—(1) The "Hill Creeks," which are long, narrow creeks, situated high up in the mountains, at an altitude of some 4,000-5,000

feet. These creeks are for the most part worked by natural head hydraulic mining during portions of the year when pressure water is available. The fall in the bed of the creeks is sufficient to carry away the tailing, so that elevating is unnecessary. The creeks include Sanders, Bailey, Duncombe, Rowley, Grey's, Ntamban, and Foy's creeks. (2) The "Flats," which are the lower-lying valleys where the fall in the bed rock is insufficient to carry away the tailing without elevating. These "Flats" may be again subdivided into two portions, viz.: (a) King's Flat, Upper Mbabane Flats, M'Vundlela Flats, situated close to the Township of Mbabane at an altitude of some 3,500-4,000 feet, and (b) Stable Creek, Manzane Creek, and the Lower Mbabane Flats, situated some five miles south at an altitude of some 2,000-2,500 feet.

**Water Supply.**—The annual rainfall averages about 50 in. In the last ten years the minimum has been 36.46 in., and the maximum 72.83 in. The supply of water to all the Hill Creeks, with the exception of Foy's, is from the Ntamban Spruit, which is taken out high up in the mountains and carried in a water-race some seven miles long, through one tunnel, to a series of storage dams, from which it is distributed to the various creeks in subsidiary races. The amount of this water is about 225 cub. ft. per min. in the wet season, diminishing to about 20 cub. ft. per min. in the dry season. This water, after doing its work at Rowley Creek, is settled and used over again at Sanders Creek and Bailey Creek. The main supply to the flats is from the Mbabane River itself, which only rises some two miles above the upper working, supplemented by water taken out of the Umbelusi River and brought by a race some 11 miles in length to the main upper flats, where it is delivered under a head of 150-300 feet. The full capacity of this race is about 1,000 cub. ft. per min., but rarely is more than 800 cub. ft. per min. delivered during the wet season, whilst during the dry season this falls off to some 300 cub. ft. per min. This water is, however, utilised to the utmost extent as follows: (1) It is used under pressure in monitors to break ground in the Upper Mbabane Flat and King's Flat. (2) After settlement in the big paddocks already worked out, it is caught up by another race and taken for use under pressure in monitors to break ground lower down at the Mbabane Flats. (3) After settling it is caught up at the head of the Mbabane Falls (over which it previously ran to waste) and carried in a short race to the head-box of a pipeline some 2,000 ft. long, where a portion of it is delivered under an effective head of 500 ft. to a Pelton wheel direct-coupled to an electric generator, which supplies the power necessary to drive the three gravel pumps; these elevate the gravel, which this same water has already broken down. (4) After leaving the tail race of the Pelton wheel, this water, together with the overflow from the head-box, is taken by another water race, carried some four miles further on to Stable Creek, where it is again used for breaking ground, and, owing to the quantity being in excess of requirements, also for elevating the ground by means of an hydraulic elevator. Thus the same water is used three times over for breaking fresh ground, and once for generating the power required to elevate the ground it has already broken.

(To be continued.)

## PERSONAL.

Mr. W. Pott has returned to the Rand.

Mr. S. B. Joel left the Rand this week on his return to England.

Mr. Bailey Southwell left the Rand this week on his way to England to "join up."

Mr. Cousins has been gazetted Director of Statistics for the Union, as well as Acting Director of the Census. Mr. A. W. Rogers, D.Sc., and Mr. A. L. Hall, B.A., are gazetted Director and Assistant Director of the Geological Survey.

Among those shortly leaving for the front is Mr. J. F. Billbrough, managing secretary of the Rand Mutual Assurance Co., and one of the pioneers of the "safety first" movement, which has led to a reduction in the number of accidents on the mines. He served, with the rank of Captain, with the I.L.H. in the German South-West Africa campaign.

\* Paper read before the I. of M. and M., London.

## THE WEEK IN THE SHAREMARKET.

## Scare—Recovery—Relapse—And Improvement.

ONE of the strongest points which has been offered to the sharemarket since the war began was, strangely enough, taken away on Saturday morning. Revolution in Russia—"Out we go!" And so they started, as soon as the doors were open, onto the Springs Mines which had closed at 58s. 6d., then Government Areas closing at 57s. 3d., and their Sub Nigels, whose last figure was 26s. 3d. The only stock in firm demand and at an advance was Brakpan. Knight Centrals lost all their previous day's gains. Modder Deeps passed without any quotation, while Modder B. dealings were limited to odd lots. The market steadied itself before closing. At the opening on Monday the attention of dealers was concentrated on Government Areas, Springs Mines and Sub Nigels. It soon became evident that those who had been scared out of their holdings by bill heads were repenting of their precipitation. The call was one of the most active for the last six months, no less than 28 stocks being dealt in. Government Areas induced one of the old-time howling rushes to the centre of the hall. The feature of the call, however, was the sensational rise in New Modderfonteins. When an offer to sell ex London at £19 12s. 6d. was made it looked as if the gentleman so doing was merely trying the quality of his voice, but there was no delay in concluding the deal. The ill-fated Vogel Deep is in liquidation, and the selling price is 2d. The market remained active during the day without change in prices. Business was again fairly brisk at Tuesday's call with Government Areas once more a noisy feature, though the net result was only a variation of a ticky up. Rand Selections made further good progress; Nourse Mines also firmed up, while Springs Mines and Sub Nigels eased off. On Wednesday morning there was a general set-back in the favourites, including Government Areas, Rand Selections losing 2s. 6d. No reason is given except that prices were rushed and now some holders are getting nervous. In the small stocks, there was somewhat of a demand for Simmer Deeps at improved rates. Invetas having obtained an unofficial quotation, are being freely dealt in. On Thursday morning the market was easier again all round, with the one exception of Leeuwpoot Tins. The volume of business was also very much reduced. It looks as if those who threw out their shares at the beginning of the week would be justified in the long run, for after the rapid recovery the set-back has taken place and the original sellers are now enabled to replace everything previously sold at a lower figure. The following is the week's and closing record of unlisted stocks:—Invetas, 45s. sales and buyers; South Van Ryns, 6s. sales; Antimony, 2s. sales; Monteleo, 92s. 6d. sales; New Compound Diamonds, 13s. 6d. to 14s.; Randfontein Explorations, 2s. 6d. buyers; Natalites, £35 sellers; Old Daggas, 9s. 6d. to 10s.; New Daggas, 15s. to 19s.; Options, 7s. sales; Alkalis, 23s. sales; Phoenix, 9d. to 10d.; Henderson's Options, 9d. to 11d.; Hayes Reynolds, 5s. to 10s.; King's Asbestos, 10s. buyers.

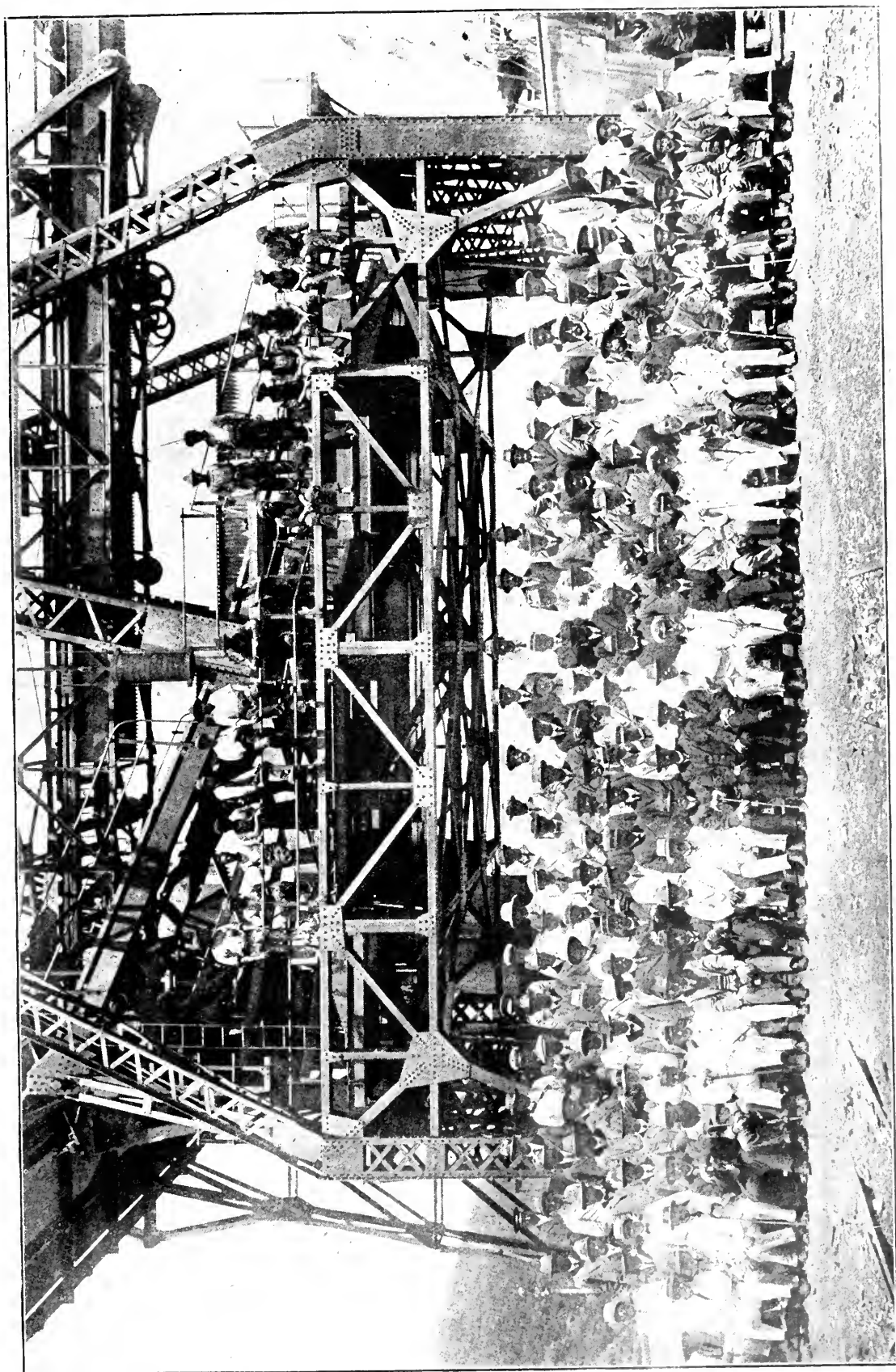
The market hardened on Thursday afternoon and the improvement was maintained at Friday's call. The following show the alteration in prices since the list was printed: City Deeps, 77s. sales and buyers; Consolidated Mines Selections, 21s. to 22s.; City and Suburbans, 31s. 6d. to 32s.; Ferreira Deeps, 25s. 6d. sales; Geduld Proprietary, 38s. 6d. and 39s. sales and buyers; Government Areas, 58s. 6d. sales and buyers; Leeuwpoot Tins, 15s. sales and sellers; Main Reef Wests, 3s. 6d. sales and sellers; Modder B's, £7 9s. to £7 9s. 6d.; Modder Deeps, £6 6s. 9d. sales; New Eland Diamonds, 17s. to 19s.; Rand Selections, 65s. sales; Sub Nigels, 25s. 6d. to 25s. 9d.; Springs Mines, 55s. and 54s. 9d. sales; Van Ryn Deeps, 65s. sales; Village Deeps, 24s. 6d. buyers; Wolluters, 10s. 8d. to 10s. 9d.; Zaaiplaats, 7s. 6d. to 7s. 8d.

	Fri. 16th.	Sat. 17th.	Mon. 19th.	Tues. 20th.	Wed. 21st.	Thurs. 22nd.
African Farms	7 6*	7 6*	7 9*	7 6*	7 6*	7 7*
Apex Mines	6 0*	6 0*	6 0*	6 0*	6 9*	6 9*
Aurora Wests	13 9*	14 0*	—	—	13 6*	13 6*

	Fri. 16th.	Sat. 17th.	Mon. 19th.	Tues. 20th.	Wed. 21st.	Thurs. 22nd.
Brakpan Cons.	6 9*	6 5*	6 9*	6 6*	6 4*	6 4*
Brakpan Mines	91 0*	95 0*	97 0*	96 0*	96 0*	97 0*
Breyten Collieries	16 0*	16 6*	17 6d	17 0*	17 0*	17 0*
Bushveld Tins	0 5*	—	—	0 5*	0 5*	—
Cinderella Cons.	4 0*	4 6*	—	—	4 0*	4 0*
City & Suburbans	32 0*	31 6*	31 9*	31 9*	31 3*	31 3*
City Deeps	77 0*	76 6*	77 6*	77 0*	76 3*	76 3*
Cloverfield Mines	8 0*	8 0*	8 1	8 1	8 1	8 1
Clydesdale Cons.	—	12 6*	12 6*	12 6*	12 6*	12 6*
Con. Investments	17 9*	17 9*	—	17 9*	17 6*	17 6*
Con. Langhagtes	24 0*	23 0*	24 0	23 0*	23 6*	23 6*
Con. Main Reef	15 9	16 0*	16 0	—	—	16 3*
Con. Mines Select.	21 3	20 6*	21 6	21 0*	22 0	21 3*
Coronation Cons.	31 0*	31 0*	—	31 0*	—	31 0*
Coronation Synd.	1 0*	—	—	1 0*	—	—
Crown Mines	50 0*	60 0*	50 0*	60 0*	—	60 0*
Crown Mines Deb.	—	—	£100*	—	—	—
Durban Road Deeps	8 6*	—	8 6*	8 6*	8 6*	8 6*
E. Rand Centrals	9 6*	10 0*	9 6*	—	—	10 0*
E. Rand Coals	2 0*	2 0	2 3*	2 1	2 1*	2 0*
E. Rand Deeps	1 0	1 0*	1 1	0 11*	0 11*	0 11*
E.R. Minings	12 0*	12 0*	12 6*	13 0*	12 6*	—
E. Rand Props.	10 3*	10 3*	10 3*	10 3*	10 3*	10 3*
Eastern Golds	1 2*	1 3*	1 0*	1 2*	—	1 3*
Ferreira Deeps	22 6*	—	—	—	—	—
F. Smith Diamonds	3 3*	—	3 3*	3 3*	3 4	3 3*
Geduld Props.	38 6	38 6	38 9	38 0	38 3	37 9*
Glencairns	1 0*	1 0*	1 0*	—	—	1 0*
Glencoe Collieries	9 3*	—	9 3*	9 3*	—	9 3*
Government Areas	58 12	57 72	59 3	59 42	58 0	57 9
Jupiters	6 0*	6 0*	6 0*	6 3*	6 3*	6 3*
Knight Centrals	8 7	8 1	8 2	8 4	8 2	8 0
Lace Props.	4 10*	5 0	4 10*	4 10	4 10*	4 9*
Leeuwpoot Tins	10 9	11 0*	11 9	12 0	12 3	13 0
Luipaardsklei Est.	—	—	7 0*	7 0*	7 0*	7 0*
Lydenburg Farms	5 9	5 9*	6 1	6 3*	5 9*	—
Main Reef Wests	4 1	3 9*	3 10*	3 9	3 7*	3 3*
Main Reef West Deb.	—	—	£12*	—	—	—
Meyer & Charlton's	—	—	—	110 0*	110 0*	105 0*
Middelvel Est.	1 3*	1 3*	1 5*	1 5*	—	1 3*
Modder B's	148 6*	149 0*	150 0	148 6*	148 0*	147 6*
Modder Deep	127 0	—	126 6*	127 6*	127 0	126 6*
Natal Navig. Col.	—	18 9*	18 6*	18 6*	18 9*	19 6*
National Banks	—	—	—	—	—	£111*
New Boksburgs	1 6*	1 6*	1 6*	1 0*	1 6*	1 4*
New Eland Diamonds	17 6*	17 6*	—	—	17 6*	—
New Era Cons.	8 6*	8 6*	8 9	8 6*	8 6*	8 7*
New Geduld Deeps	7 1*	7 1*	7 0	7 0	7 0*	7 0*
New Heriots	—	—	46 0*	46 0*	45 0*	41 6*
New Kleinfonteins	17 6*	17 3*	17 9	17 6*	17 3*	17 3*
New Modderfontein	£19*	£19*	£19*	£19*	£19*	£19*
New Rietfonteins	—	—	0 11*	—	—	—
New Unifields	10 0*	10 0*	—	10 0*	—	10 0*
Nigels	—	2 0*	—	—	2 0*	2 0*
Nourse Mines	22 6*	22 9*	23 0*	24 6	23 0	23 6*
Pretoria Cements	81 0*	81 0*	81 6*	81 0*	81 6*	82 0*
Princess Estates	—	—	—	2 0*	—	—
Rand Collieries	—	2 3*	2 3*	2 3*	2 3*	2 3*
Rand Klips	8 10*	8 10*	8 10*	8 10	8 9*	8 9*
Rand Nucleus	1 4*	1 6*	1 4*	1 3*	1 3*	1 2*
Rand Select. Corp.	65 6*	64 6*	66 3*	67 6	65 0	63 9*
Randfontein Deeps	6 0*	6 0*	5 9	6 0*	5 6*	5 6*
Randfontein Est.	13 9*	14 3	14 6	15 0	14 6*	14 72*
Roberts Victors	11 0*	—	11 0*	—	—	—
Rooibergs	5 6*	5 9	5 6*	5 3*	5 6*	5 6*
Rodepoort Uniteds	—	5 0*	8 0*	7 0*	—	5 0*
Ryan Nigels	—	2 6*	2 6*	2 6*	2 6	2 0*
Shebas	1 3*	1 3*	1 3*	1 3*	1 3*	1 3*
Simmer and Jacks	—	—	—	—	5 3*	—
Simmer Deeps	2 3*	2 6*	2 3*	2 6	3 0	2 6*
S.A. Breweries	—	—	30 0*	30 0*	—	—
S.A. Lands	3 10*	3 10*	3 11	4 0	4 0*	4 0*
Springs Mines	57 3	56 6	57 3	56 9	55 0	54 9
Sub Nigels	25 9	25 6	26 3	25 9	25 3	25 0*
Swaziland Tins	27 6*	—	—	27 6*	—	—
Trans. & Del. Bay	—	10 0*	—	—	—	—
Transvaal Lands	10 6*	10 0*	10 0*	—	—	12 6*
Trans. G.M. Est.	20 0*	—	—	19 0*	—	18 6*
Van Ryn Deeps	63 3	63 0*	63 6	64 3	64 6	64 0*
Village Deeps	24 6	—	—	24 0*	24 0*	24 0*
Vogel Cons. Deeps	—	0 2*	—	—	—	—
West Rand Cons.	6 0*	5 0*	6 0*	5 0*	6 0*	5 0*
Western Rand Est.	—	—	—	—	—	1 8*
Witbank Collieries	—	—	—	—	42 6*	—
Witwatersrauds	45 0*	—	45 0	—	14 0	45 0*
Wit. Deeps	17 6*	17 6*	18 0	18 0	17 0*	17 0
Wolluters	10 5*	10 6	10 6	10 8	10 6	10 6
Zaaiplaats Tins	8 1	7 7	7 7	—	7 6	7 4

Union 5 per cent.—16th, £101 6s. 9d.\*; 17th, £101 8s. 9d.; 19th, £101 10s.; 20th, £101\*; 21st, £101 10s.; 22nd, £101 10s. 9d.\*

\*Buyers; †Sellers; ‡ Odd lots; § Ex London.



VISITORS AT OFFICIAL OPENING OF THE NEW COALING PLANT AT THE BLUFF, DURBAN, BY SIR THOMAS HYSLOP, FEBRUARY 9TH, 1917.  
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## TRANSVAAL CHAMBER OF MINES: ANNUAL REPORT.—II.

### An Official Review of the Outstanding Industrial Questions of the Year.

#### TRANSVAAL MINING LEASES BILL, 1916

This Bill was introduced into the House of Assembly, but owing to the prorogation of Parliament was not proceeded with. It embodied the report of the Select Committee appointed to consider the question of the development of the Far East Rand. The President and the Legal Adviser gave evidence on behalf of the Chamber before the Select Committee, and many of the Chamber's recommendations were embodied in the Bill. Its main provisions are: (1) The repeal of section 16 of the existing Gold Law, and the establishment of a Board to which applications for a lease may be made, the application to contain the applicant's financial proposals, the general scheme of working the area, and the share of profits which he is prepared to pay to the Government in respect of the lease. (2) The Governor-General is empowered to grant an application of this nature on the recommendation of the Board, any lease so entered into to be laid upon the Table of both Houses of Parliament. (3) Any lease entered into without the approval of the Board not to be binding until approved by resolutions of both Houses of Parliament. (4) Provision is further made for the amendment of existing or future leases, but no such amendment becomes valid until so resolved by Parliament. (5) Rent is to be paid to the freehold owner as though the area leased were claims. (6) Power is taken to permit prospecting on open proclaimed land, and in the event of a discovery of gold, the discoverer to be entitled to peg an area of not less than 25 or more than 50 claims.

#### MINES AND WORKS ACT

The Mines Department recently submitted to the Chamber numerous amendments revising generally the Mines and Works Regulations, and a Technical Sub-Committee, consisting of representatives of the Consulting Engineers, Association of Mine Managers, the Miners' Phthisis Prevention Committee, and the "Safety First" Committee, was appointed to draw up the Chamber's representations thereon. The Chamber's Sub-Committee had two interviews with the Government Mining Engineer on the subject, and subsequently the Chamber's representations on the amendments were submitted in writing to the Government. No amendments had been promulgated at the end of the year.

#### MINING TAXATION ACT

During the year a further case of considerable importance under the above Act, that of the Union Government v. The New Primrose G.M. Co., Ltd., was finally decided in favour of the company on appeal. The case affects all companies producing gold prior to 1902, and decided that in the interpretation of the provisions governing the calculation of the amount of the allowance for amortisation of capital expenditure, the period of the Boer War is not to be included in the life of the mine, and that readjustments can be made on an alteration in the life of the mine of payments assumed under the Act to have been paid into a hypothetical sinking fund established under the Act from the commencement of production until the coming into force of the Profits Tax Proclamation of 1902.

#### MEN ON ACTIVE SERVICE.

Over 3,500 employees of the gold mines were on active service with permission during the year, under the following conditions: Their situations are kept open for them; married men receive half-pay; single men with dependents receive such pay as has been agreed upon between the employer and the man concerned; single men without dependents receive quarter pay; in each case the above payments are in addition to the military pay such employees may receive; the period of active service counts as service with the company for the purpose of leave privileges; and on discharge each man is granted one month's special leave on full pay, apart from any leave privileges to which he may be entitled under the leave regulations. Since the close of the year the above conditions have been made applicable to temporary men who have been engaged to fill the places of men on active service, and who have completed four months' service with the company concerned, with the exception that their situations are not kept open for them in view of the nature of their engagement. With regard to men who have enlisted without the company's permission, these men will be reinstated in their former situations on their discharge, their period of active service counting as service with the company for the purpose of leave privileges. In addition, one month's special leave on full pay will be granted to each man, apart from any leave privileges to which he may be entitled under the leave regulations.

#### DRAUGHTSMEN FOR EUROPE.

In December the Chamber, at the request of the Munitions Department, despatched a number of Engineer Constructional Draughtsmen to England. The Department stipulated that the gentlemen sent should be experienced in mining constructional work on the Rand, and consequently most of those selected were in the employment of the mining houses.

#### AVIATION CORPS.

At the request of the Defence Department, the Chamber recruited 84 mechanics for service in the Aviation Corps in East Africa.

#### RE-EMPLOYMENT OF EMPLOYEES RETURNING FROM ACTIVE SERVICE.

The Executive Committee of the Governor-General's Fund has appointed a special committee to consider the vocational re-education of discharged South African soldiers, on which two members of your Executive Committee have been appointed. Your Executive Committee has itself appointed a Technical Sub-Committee to consider the subject of the re-employment generally of the employees of the gold mining industry returning from active service. The Sub-Committee had not issued its report at the close of the year.

#### BRAVERY OF MINE EMPLOYEES.

During the year the Chamber's medal for bravery was presented to Mr. W. F. Butler, of the Crown Mines, Limited, and to Mrs. Bennett, on behalf of her late husband, Mr. J. M. Bennett, also of the Crown Mines, Limited, who regrettably lost his life by his brave action. In both cases the medal was accompanied by a gold watch, suitably inscribed, and the names will be placed on the Chamber's Roll of Honour.

#### WATER SUPPLY.

In view of the difficulty of carrying out the original scheme for obtaining water from the Vaal River, authorised under the Rand Water Board Supplementary Water Supply (Private) Act, 1914, owing to the altered circumstances brought about by the war, the Rand Water Board has decided to adopt a modification of that scheme providing for five million gallons of water per diem at a capital cost of £758,000, the modified scheme to be completed, according to the estimates of the Chief Engineer of the Board, within three years from the date of its commencement. Work on the modified scheme is now in progress.

#### ENCOURAGEMENT OF LOCAL INDUSTRIES.

With a view to encouraging the establishment of local industries, several of the mining groups arranged, during the year, for the formation of a company to provide financial assistance to promising industries. The capital of the company is £100,000, and the directorate consists of Messrs. Alex. Aiken, W. A. Martin, and R. Niven.

#### PATENTS.

At the end of 1915 four applications, to which the Chamber had entered opposition, were still *sub judice* (excluding two applications in which extensions had been granted the applicants until the cessation of hostilities between Great Britain and Germany). In three cases the applications were amended to meet the requirements of the Chamber, and in the remaining case the application was abandoned. During the year 48 specifications were reported upon by the Patents Committee. In 39 of these it was decided that no action should be taken by the Chamber, and opposition was entered to the remaining nine. Of the opposed applications, in five cases the applications were abandoned, and in one case the application was amended to meet the objections of the Chamber; leaving three cases outstanding at the close of the year.

#### DAYLIGHT SAVING.

Representations were made to the Government in support of the requests of various public bodies throughout the Union in favour of an alteration in the Union time during the summer months, by putting forward the clock one hour. The Government was unable to take action in the matter, but the members of the Chamber adopted the recommendation of your Executive Committee that from the beginning of October until the end of April the town offices of the mining houses should open at 8 a.m. and close at 4 p.m., and this recommendation was also adopted, where possible, in respect of mine offices and workshop employees. The practice was followed by the members of the Stock Exchange, the Witwatersrand Commercial Exchange, a number of the members of the Chamber of Commerce, the Rand Water Board, and several other public bodies.

#### GOVERNOR-GENERAL'S FUND.

In response to the special appeal of His Excellency the Governor-General, the Chamber, on behalf of its gold mining members, has made a contribution to the fund of £30,000, in monthly instalments of £2,500 each.

#### WITWATERSRAND UNIVERSITY.

The Chamber, on behalf of its gold mining members, has made a contribution towards the working expenses of the above University of £5,000 per annum for a period of three years.

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# Rhodesian Section.

## RHODESIA CHAMBER OF MINES: ANNUAL REPORT.

### Review of Industrial Questions.

THE annual report of the Rhodesia Chamber of Mines for 1916 has the following, *inter alia*:—Owing to numerous letters received from prospectors, miners and others regarding the impossibility, especially in relation to base metals, of being able to arrive at economic terms with the Railways as to transport, the Chamber drew up a memorandum in conjunction with the Salisbury Chamber of Mines and the Rhodesian Small Workers' and Tributors' Association, setting forth certain causes of complaint. The memorandum was forwarded to the Administration with a request that an expert should be appointed to go into the matter at once, and also that the enquiry agreed to by the Legislative Council in 1914 should now be proceeded with. At the request of the B.S.A. Company in London the Board of Trade has nominated Mr. W. M. Acworth, the well-known authority on railways to act as Commissioner to conduct the enquiry. Mr. Acworth was expected to arrive in Southern Rhodesia for this purpose about the beginning of April next, but owing to the maritime situation the Government has postponed the enquiry for the time being. As the question of railway policy and rates was regarded as a national one, affecting every industry and individual in the country, a committee was appointed consisting of the Presidents of the Salisbury and Bulawayo Chambers of Mines, Salisbury and Bulawayo Chambers of Commerce, Rhodesian Small Workers' and Tributors' Association and the Rhodesian Agricultural Union, for the purpose of preparing the case for the public. This committee has engaged the service of Mr. G. T. Dowling, ex-Traffic Manager, and Mr. John Taylor, the well-known barrister in Johannesburg, and these gentlemen are now collaborating with the above object in view.

#### MINING CONFERENCE.

An annual Mining Conference was inaugurated in Salisbury on the 15th and 16th November, and was attended by a large number of representatives of the mining industry from all parts of the country. H.H. The Administrator opened the proceedings which were very ably presided over by Col. Raleigh Grey, M.L.C., the President of the Salisbury Chamber of Mines. Various subjects relating to the industry were discussed, and it was agreed by all present that the conference was an unqualified success. It is intended that the conference should be held in a different centre each year, but it has not yet been decided where the meeting for 1917 shall take place.

#### RHODESIAN MINING UNION.

Perhaps one of the most important events which occurred at the Mining Conference in Salisbury was the formation of a central body, to be called the Rhodesian Mining Union, to which all mining chambers and associations in the country can belong. A committee was appointed consisting of one member from each of the Salisbury and Bulawayo Chambers of Mines, and from the Rhodesian Small Workers' and Tributors' Association, for the purpose of drafting rules

and regulations for the Union. The head office of the Union will be the office of the chamber or Association situated in the town where the annual conference is held, and it has been agreed that the financial year shall end on 30th June each year.

#### USE OF HIGH GRADE EXPLOSIVES.

Owing to representations made by the Imperial Government to the Union Government, various substitutes for high explosives have been introduced containing lower percentages of nitro-glycerine, with the object of economising the use of this substance so largely required at present for war purposes. These substitutes have proved very successful and important economies have been effected by their use.

#### DISTRICT COMMITTEES.

In August last, the President visited the Queen's and Filabusi Districts for the purpose of addressing meetings of Small Workers and explaining the objects of the Chamber in regard to the requirements of the mining industry. The necessity of the co-operation of individual workers in support of the Chamber was impressed upon those present at the meetings and each district has now formed a local committee to deal with its own particular needs as they arise and to report to the Executive Committee from time to time so that the Chamber will be able to take action in regard to any question affecting the interests of the industry. Several matters brought up by these district committees have been dealt with, such as mining water rights, fencing of shafts, excavations, etc., periodical Court at Queen's Mine, medical officers' fees, supplies of coal, claim licences, price of maize, absence of farm beacons, Balla Balla railway, etc. The membership of the Chamber in the Filabusi district consisted of seven and in the Queen's district five.

#### MINING WATER RIGHTS.

As there appeared to be a great deal of uncertainty in various quarters on the rights to water possessed by claim-holders, the Executive Committee took legal opinion on the subject, and it may be of use to state this briefly here as follows: "Under Section 73 of the Mining Laws the registered owner of a mining location has the right to peg a site on any land open to prospecting in the vicinity of his location for the purpose of obtaining water for his mining purposes by sinking wells thereon. If there is no satisfactory site in the vicinity of the location the owner may obtain a sit. for this purpose elsewhere on the grant of the Secretary for Mines under the same section."

#### PRICE OF MEALIES

This question has engaged the attention of the Executive several times during the year, and representations have been made to the Administration in regard to the enhanced price of mealies which did not appear to be in any sense justifiable. It was maintained that no export of mealies

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should be permitted by Government unless it was quite clear that this would not bring about any shortage in this country.

#### MINING CONTRACTS

With a view to enabling miners to obtain supplies of machines or machine tools at a uniform fixed price throughout the year, negotiations were entered into by a committee appointed at the Mining Conference in Salisbury, and the Salisbury Farmers' Cooperative Society. The conditions of contract were put forward by the Society and considered and commented upon by members of the Chamber. Several modifications and alterations were suggested to the Society through the Salisbury Chamber of Mines, and it was understood that the Society was now prepared to enter into contracts with companies and individual miners. Any company or individual desirous of contracting with the Society should communicate direct with the manager of the Society before 1st May next.

#### FARM BEACONS.

It was brought to the notice of the Executive by certain prospectors that beacons on farms are more often than not difficult to find, and when found, impossible to identify owing to the absence of any distinguishing mark upon them, and it was not therefore possible to advise the landowners of an occupied farm of intention to prospect thereon in accordance with the Heritage Preservation Ordinance of 1913. The absence of beacons or of properly marked beacons also led to disputes in regard to wood-cutting, grazing and water rights. Representations to this effect were made to the Secretary for Mines, with the result that steps were taken to bring this matter to the notice of the various Farmers' Associations throughout the country.

#### SPECIAL PROTECTION DURING THE WAR.

As regards the arrangement made by the Government, by which unworked claims could be protected for a period

of two years from the outbreak of war on payment of £1 per block for 1 month, provided that claimowners could show that they were doing a reasonable amount of work in the country, representations were made to the Secretary for Mines requesting the Government to continue this arrangement in view of mining conditions being still more onerous now than when the arrangement was agreed to. The Secretary for Mines has now advised the Chamber that in view of the continuation of the war, he is willing to extend the period of two years under the above conditions.

#### PATENTS.

During the year the Patents Committee has examined six applications for letters patent, and upon its recommendation the Chamber has lodged an objection to one of these relating to the treatment of timber. An arrangement has now been made with the Transvaal Chamber of Mines whereby lists of applications affecting the mining industry in the Transvaal and S. Rhodesia will be exchanged each month between the two Chambers.

#### EXPORTS OF MINING MATERIALS FROM GREAT BRITAIN.

The list of prohibited exports from Great Britain became very comprehensive during the year, and upon representations being made to the administration an arrangement was made by the B.S.A. Co. in London with the War Trade Department, under which merchants in S. Rhodesia could submit a declaration in regard to each indent for mining materials to either the Salisbury or Bulawayo Chambers of Mines for the purpose of its being viséd by either Chamber if found to be in order. The declaration is then sent to H.H. the Administrator for signature, and the merchant finally attaches the completed document to his indent.

## ANSWERS TO CORRESPONDENTS

*All enquiries addressed to the Editor must bear the writer's name and full address. We cannot reply to enquiries by letter, but telegrams with replies prepaid will be answered. Correspondents are requested to write their names and pseudonyms distinctly.*

- "Interested."—Assays are being made, and will doubtless be announced next week.
- "Bitten."—Your informant has confused the names of the two companies. The mystery is explained in another part of this issue.
- "New Broom."—(1) Yes. (2) Yes. (3)  $12\frac{1}{2}$  per cent.
- "G. G. B." (Capetown).—The mine has been closed down since 1906, and is in the hands of a caretaker.
- "Hopeful."—It is unlikely that any move will be made before the end of the war.
- "Far East."—The whole matter, we understand, is to be brought up in the House of Assembly at an early date.
- "V. S. B."—Boring is, we believe, about to begin on the farm in question.
- "City Deeper" (Capetown).—A Butters' filter plant of 45,000 tons slimes per month capacity was recently substituted for the slimes decantation process with the object of improving metallurgical efficiency and increasing the total capacity of the treatment plant. The new plant is working satisfactorily.
- "Investor."—Particulars of the Modderfontein East were given in a recent issue. It will comprise the properties of the Rand Klip, the Cloverfield, and the new area under which mining rights were recently secured from the Government by the Central Mining Corporation. The capital will be £752,041 in £1 shares, and power is taken to issue a further 747,959

shares, the working capital that will be thus provided being ultimately £1,181,080. The area will be some 2,250 to 2,450 claims and the technical management will be in the hands of the Central Mining Corporation.

#### T.G.M.E. Dividend.

The directors of the Transvaal Gold Mining Estates, Ltd., have declared a dividend of 5 per cent. (1s. per share) for the period ending 31st March, 1917.

In the House of Assembly this week Mr. Roos asked the Minister of Railways and Harbours whether the Government intended in the near future to take into consideration the construction of a railway line from Ermelo via Lake Chrissie through Swaziland to Delagoa Bay. The Minister replied that it was not proposed to embark upon any railway construction proposals at present. Apart from the financial situation, it was impossible to obtain the necessary permanent-way material. A survey would shortly be made via Chrissie to the Swaziland border, and the claims of this district would be considered when the next construction programme was being framed.

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## **THE WEEK IN THE MINING MATERIAL AND ENGINEERING TRADES.**

### **Business Easier but Better Feeling—Big Engineering Contract for Johannesburg—Start to be Made on "Modder East"—Speculation in White Lead.**

ALTHOUGH business is easier, yet the feeling is better and brighter in consequence of the favourable war news. Another reason for this optimistic feeling is that three ship-loads of general merchandise and mining material arrived at our coast ports during the week. This has been quite a pleasant surprise as lots of the smaller kinds of goods and mining material have arrived unexpectedly, which is explained by the fact that South Africa has not yet adversely felt the full effects of the British prohibitive export list. Yet another reason for hopefulness is the recent receipt of such buoyant cables, as compared with the doleful letters written about the time of the restrictions on shipping. The exporters, when they wrote the letters, were perplexed as to the chances they had in sending goods to South Africa, therefore they declined all responsibility.

#### **JOHANNESBURG ENGINEERING SHOPS.**

Quite a little flutter of satisfaction has been created by the knowledge leaking out that a big contract has been accepted by a Johannesburg engineering shop for one of the biggest jobs ever attempted in Johannesburg. Negotiations have been going on for some time in connection with this job. It appears that some heavy machinery used in the gold reduction works could not be finished in England owing to Government pressure of work; then the question arose as to whether the finishing touches could not be done here. After much consideration and strengthening of foundations and adding to the structural portions of the machinery, it has been decided to make a supreme effort to tackle the job; hence the satisfaction.

#### **MACHINERY AND TACKLE.**

Whilst on this subject it is also satisfactory to record that the several mining group yards have come forward and arranged to supply a lot of machinery and engine power as well as structural girders and sundries. This new departure is to assist the proposed company called the Modder East,

which primarily consists of one of the recently leased Government mining areas, to make a start with sinking shafts and laying out a mine generally. Naturally everything will be paid for, but that is not of chief importance, as the thing that matters in this case is to obtain the necessary plant from anywhere, as there is no chance of getting it from the United Kingdom, at least for twelve months, or maybe until after the war.

#### **THE ISSUE OF PERMITS.**

Notwithstanding the brighter feeling through more mining material arriving from Britain than expected, a certain vein of disappointment is being engendered, owing to the contemplated action of the Committee entrusted with the recommendation of urgent export permits from Great Britain. In fact preliminary steps have been taken by the Committee issuing new regulations with the view of restricting the imports so recommended, solely for the mining industry. For example, suppose 500 lengths of bar iron or a consignment of steel, etc., are arranged for, the merchant must keep the stock in his warehouse solely for the use of the mines. On the face of it, this does not seem unreasonable, nevertheless it is disappointing at this stage where it was hoped a more generous method would be adopted.

#### **SPECULATION IN WHITE LEAD.**

Several importers who had sold out their stocks and had the money lying in the bank, were anxious to make current expenses and after much consideration they decided to buy white lead, as they recognised the fact that it was out of the question to replenish ordinary stocks, especially at these high prices. Hence a speculation in white lead; we have sufficient of that commodity to last Johannesburg twelve months and more. It is estimated that from 250 to 300 tons have been accumulated, with an estimated value of £14,000. So far this incubus is keeping the market down, but holders are not depressed as there is no chance of white

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lead going down at present; however, 73s. 6d. per 100 lbs. is a high price and unless the overseas values expand very much, there can be no advance on this side.

#### STEEL PLATES, GALVANISED IRON, ETC.

The scarcity of steel plates is becoming more acute, so much so that our standard list of values is only a poor guide. The real position is that holders are chary about selling, especially outside their regular trade customers, hence it has become a matter of negotiation both as regards getting the plates and then as to the price. From this, it must of necessity strike one that the local steel market, not only for steel plates but for all kinds of steel, is very narrowly watched from day to day. Galvanised iron both for roofing and flat work is running steel pretty close as regards its scarcity and price. However, relief is expected from America as very decent consignments are looked for during the coming week from that quarter. As regards the supplies from England, advices are in that old orders are likely to come along very shortly, and hopes are entertained from the tenour of the correspondence that permits may be obtained occasionally, as the export trade has hitherto been an important one from Britain to South Africa. The difference between the steel trade and the galvanised iron is that the former seems to be controlled by the big makers in America, whereas galvanised iron is being manufactured by many of the smaller works. By the way, the American galvanised iron now expected will come at a trifle higher, landed cost than the English, but it will not be sufficient to alter the present standard list. It is said that Maritzburg roofing tiles are being used to a small extent in Johannesburg as a substitute for the roofing iron.

#### TIMBER: OVERSEA AND LOCAL.

According to the latest advices from the North Sea and London, the timber trade is passing through a very momentous period. The Swedish timber merchants were discussing the position, when the mail left, almost as calmly as ever. The new position created by Germany's latest decree to sink at sight all boats entering her new war zone makes the outlook for the timber trade rather gloomy, but very puzzling. In passing it can be noted that the timber supplies in London are above the war average; deals exceed last year's comparison by over 300,000; rough boards are up by three million pieces, and slatings and palings a surplus of nearly three millions. Deals are estimated to last five months, battens six months, rough boards nine months, and floorings over seven months. The prices, which vary considerably, were at the middle of February: 4 in. x 11 in., first Archangel, from £43 to £48, and even more, per standard; 3 in. x 9 in., thirds, from £35 to £40, and so on. Good battens, 7 in., were placed at £33 to £35, and short lengths at about £30; spruce deals fetched from £40 upwards; 9 in., £36 to £38; and 7 in., £33 to £34. These quotations are qualified as being approximate values, as in isolated instances some special cases showed much better results.

Johannesburg prices remain the same, which however represent record values since the war started. The mines

have slackened off their demands, as stocks of Baltic and Oregon are in plenty at all the mine stores. The demand by builders is the best from the Eastern Rand and not at all bad out Randfontein way, where some real activity seems forthcoming since the Barnatos have taken over the control. As regards substitutes, no doubt the Cape pine, and baulk logs cut out of the best trees, originally intended for mine timber, are being rather freely used in houses and works, in place of Baltic and Oregon pine. The Johannesburg timber merchants are quite on the cheerful side, as stocks here are quite fair, and the feeling is that we shall be occasionally getting supplies, both from the Baltic and South America (Oregon) direct. Another reason is that South Africa, when it comes to a pinch, can find substitutes, in a measure, for the lack of overseas supplies.

#### AGRICULTURAL MACHINERY.

As previously mentioned, the show may not have over many new notions, but there will be very substantial exhibits all the same. The merchants are in high spirits and hope to do excellent business and lay the foundation for future good orders, simply because there are decided prospects of a super-abundance of maize. This is a big factor now, because the Imperial Government is taking 800,000 bags away from South Africa during the next few months. This is no bare statement, as it is supported by the fact that certain ships are now under charter to convey the maize. Hitherto the trouble has not been the quantity of maize available but the absence of freight accommodation, and now our best buyer will secure that and so make the circle complete. In addition to the Imperial Government demands for maize, there are Australia and Japan also in our market, hence the agricultural future is extra rosy at the moment. Another big factor for the farmers is the ever-increasing export of beef and butter, for which ships will be provided, therefore the agricultural implement dealers have good reason to push their wares.

#### BIG ENQUIRY FOR BALING WIRE.

Quite a small sensation went the rounds this week, as the first intimation was that an enquiry was in the market from the coast for 300 to 400 tons of black baling wire. However, upon following up the enquiry, it turned out to be an order for 100 tons, and Kimberley was the place of origin. It is surprising how these fairy tales get about, but it may be because we live at such a high altitude that we are prone to exaggerate. However, the firm which has the matter in hand is making some progress in fixing up a quotation for the full 100 tons. Naturally the quotation is not available, but the ordinary figure is 45s. per 100 lbs. for small lots. This enquiry proves that Johannesburg is the recognised centre for all parts of South Africa, from which enquiries are forthcoming, and what is more they usually get the goods at a fair price.

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Timber: Deals, Baltic, 9 x 3, short and medium, 1s. 1 $\frac{1}{2}$  d.; longer lengths, 1s. 2 $\frac{1}{2}$  d. to 1s. 3d. (Oregon, 1s. 1d.); flooring,  $4\frac{1}{2}$  x 7 and 6 x 7, 6 $\frac{1}{2}$  d. per sq. ft.; do.,  $4\frac{1}{2}$  x 1 $\frac{1}{2}$ , 9 $\frac{1}{2}$  d.; and 6 x 1 $\frac{1}{2}$ , 9 $\frac{1}{2}$  d.; ceilings, 6 x  $\frac{1}{2}$ , 3 $\frac{1}{2}$  d. to 3 $\frac{1}{2}$  d. per sq. ft.; Oregon, 4 x  $\frac{3}{4}$ , 4 $\frac{1}{2}$  d.; pitch pine, 8s. per cub. ft.; Oregon, 5s. 9d. to 6s. per cub. ft.; clear pine,  $\frac{1}{2}$  in. x 12 in., 8 $\frac{1}{2}$  d. per cub. ft.; 1 in. x 12 in., 9d. to 10d.; teak, small planks, 14s. 9d. per cub. ft.; do., large, 15s. 6d.; jarrah, 9s. 6d. per cub. ft.; poplar, 1 in. x 12 in., 10d.; scantling, 1s. 1 $\frac{1}{2}$  d. to 1s. 2d. per ft., 3 x 9.

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## Industrial Section.

### HOW TO INCREASE PRODUCTION: APPLY SCIENTIFIC METHODS

If the South African farmer of to-day is confronted with innumerable difficulties, as he often claims to be, they are nothing compared with those with which the country will be faced in a few decades unless some of our foremost needs receive greater attention than they are at present getting. Our neglect of the question of soil erosion, and the want of a comprehensive policy of afforestation for conserving the rainfall, are hastening the general drying up of the country, and allowing some of the best of our soil to be gradually transferred to the sea. It is lamentable that the danger which faces coming generations is not being acknowledged by some definite corrective action. These are, of course, matters affecting the nation as well as the individual, but even the important subjects of crop rotation and the maintenance of soil fertility, which affect the individual particularly, are also to a large extent neglected. *The time has arrived for a greater application of science to agriculture.* Much as we hope to see a large development of manufacturing industries in South Africa within the next few years it is to agriculture as the primary industry we must look for future prosperity.

#### INCREASE THE YIELD.

It is only by increasing the yield per acre that our agricultural products will be able to compete in overseas markets with those from other parts of the world which are already devoting every attention to cheapening the cost of production. We are not making the most of our land at present. The yield per acre in South Africa is low even in comparison with other newly-settled countries such as Australia, New Zealand, or Canada. There is no doubt that the present small yield could be at least doubled by a more systematic use of manures. Unfortunately there is often as rooted an objection to the expenditure of money on manures as there is an unwillingness to increase the cost of ploughing by doing it more thoroughly. One explanation is that most of our farms are what may be termed "over-acred." There is a continual desire for more land, and the desire is gratified at the expense of successful farming. But a small farm thoroughly cultivated returns a much larger profit than a large farm half cultivated and which is starved in consequence. That is the first point which it is essential to bring home more constantly to the agricultural community. *Our necessity is smaller farms, more of them, and more highly cultivated lands.*

#### FERTILISERS NEEDED.

A recognition of the real value of the first will come about slowly, but the last can be actively stimulated by the provision of cheap natural and artificial fertilisers. Although it is not general there is a desire to make use of fertilisers, and it is a desire that should be encouraged, along with deep ploughing and careful cultivation. Irrigation is most profitable where there is a heavier yield to share the cost. That heavier yield requires the use of cheap fertilisers to produce it. And there is a further most important consideration that should appeal to us all. It is better to decrease the acreage under crop if by so doing the yield can be increased, for by that means the use of white labour on the land will become possible. This is a point that is constantly overlooked. More extensive cultivation—i.e., a greater yield per acre—makes the employment of skilled white labour not only practicable but a necessity. It must also be remembered that the value of our land is low for the simple reason that it produces so little. There is ample evidence of this fact in the greatly enhanced prices obtained for land on which the yield has been increased. *The attainment of a bigger yield will in a few years greatly add to the value of arable land throughout the Union.*

#### MECHANICAL CULTIVATION.

Another of South Africa's needs is mechanical power for farm purposes. This is inevitable in a country of irregular rainfall, which necessitates ploughing being done in a very short period and often when cattle are unfit for hard or continuous work. Every country in the world now sees that an increase of the productivity of the soil can be best obtained by mechanical cultivation and the use of fertilisers. The motor plough will become the most important implement on the South African farm as soon as cheap motor spirit is available. When we have such a power the breeding of cattle for slaughter only will become a practicable and profitable enterprise. For that reason and in view of the fact that the world is looking for substitutes for petrol it is hoped that the Industrial Advisory Board will lose no time in enquiring into the possibilities of obtaining a cheap motor spirit from the raw materials of this country. One or two schemes are already in the market but all likely raw products should be examined for the purpose. The production of "industrial alcohol" from maize, sugar cane, or possibly prickly pear, is a subject so closely allied with the development of agriculture in this country that the time has arrived for a most careful examination into its possibilities. The production of artificial fertilisers might well be looked into at the same time. Before long large quantities of "sulphate of ammonia" will be produced regularly in Natal. The scientific utilisation of our vast resources of coal and of the numerous by-products of its distillation will render possible the manufacture of nitrogenous fertilisers, and of other products essential in gold mining. We have, therefore, the genesis of several industries the establishment of which would revolutionise agriculture in South Africa. The productivity of the land cannot be indefinitely maintained without the application of some of those elements of plant growth contained in fertilisers. And it is generally admitted, though not practised, that we have no right to use the soil simply for the profit of the present generation, and hand it on to future generations as an impoverished asset. The claim put forward the other day that the wheat lands of the Union are limited may be true, but it is also true that science will help us if we seek her aid to make the areas we have produce far more and produce it more profitably.

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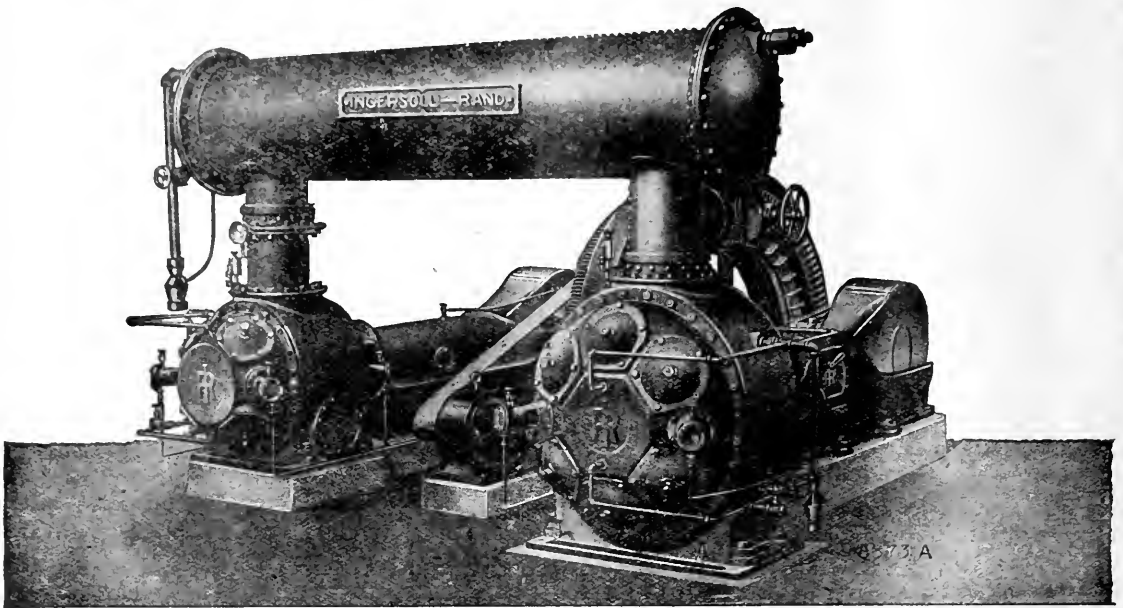
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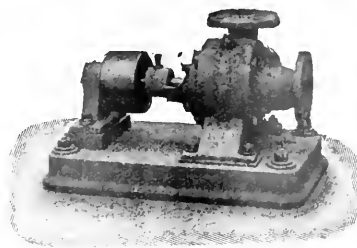
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## Engineering Notes and News.

### NEW VAAL RIVER WATER SCHEME.

On Thursday, the 15th instant, about thirty members of the Rand Water Board and members of the Council of the South African Institution of Engineers, visited the Vaal River Barrage Site about twenty-five miles below the Vereeniging Railway Bridge. The visitors spent a very interesting day under the guidance of Mr. Ingham, the Chief Engineer, and Mr. Hawkins, the Resident Engineer at the works. The visitors were particularly interested in the hydraulic sluicing which is in operation on the Free State side of the river for removing the earth and sand from the river bank. This plant consists of a 250 h.p. Babcock and Wilcox water tube boiler and a 200 h.p. Brunner vertical steam engine. The steam engine is coupled to a Sulzer centrifugal pump, capable of raising 3 million gallons of water per day against a head of 260 feet, by three Renolds chains, six inches wide. The engine runs at 200 and the pump at 960 revolutions per minute, or a ratio of 1 to 4.8. The water raised by this pump is discharged through three monitors with jets of 1½ in. and 2 in. diameter. The former size of jet is found to be more efficient for removing clay, and the latter for sand and soft earth. The visitors were afterwards entertained to lunch, at which, after the loyal toasts had been honoured, Mr. O'Hara, the Chairman of the Works Committee, welcomed the guests on behalf of the Board, and expressed the hope that the visit had been a pleasant, as well as a profitable, one from an engineering point of view. Mr. Bernard Price, the President of the Institution of Engineers, with whose name the toast of the Institution was coupled, replied, and thanked the Board for its hospitality and for the interesting day it had afforded the members of the Council of the Institution. We are indebted to Mr. Ingham for the following details of the scheme:—

#### SOME DETAILS OF THE SCHEME.

On February 15th, 1911, the Board passed the following resolution: "That the Chief Engineer consider all possible sources of supply within a radius of 50 miles of Johannesburg." Following on this, investigations were carried out and 58 schemes were examined. A Private Bill was introduced in the Union Parliament in 1914, and the necessary powers were obtained to proceed with the scheme. During the progress of the Bill through Parliament, the storage was increased by 1,800 million gallons to meet the requirements of owners riparian to the reservoir area. Provision was also made for the creation of an Extraordinary Water Court to fix the "normal flow" of the Vaal River, and the manner and times during which the Board may impound water in the reservoir. The scheme ultimately chosen was the Vaal

River Scheme, comprising a barrage across the Vaal River at a point 23½ miles downstream of the Vereeniging Railway Bridge, to impound 13,633 million gallons of water. The water will be abstracted from the reservoir at a point about one mile below the Vereeniging Railway Bridge, and pumped electrically to the main pumping station at Vereeniging. From the latter station the water will be pumped to Zwartkopjes, and from that station it will be re-pumped to a reservoir on Forest Hill, from which it will gravitate to the Simmer and Jack reservoir, and the central portion of the Rand. The catchment area is 17,119 square miles in extent, and the average annual rainfall is about 28 inches. The scheme, as originally proposed, was estimated to cost £1,250,000, of which £1,146,707 was for engineering, but owing to the difficulty of raising a loan for the full amount the Board decided to proceed with a modified scheme. Under this scheme the Barrage was to

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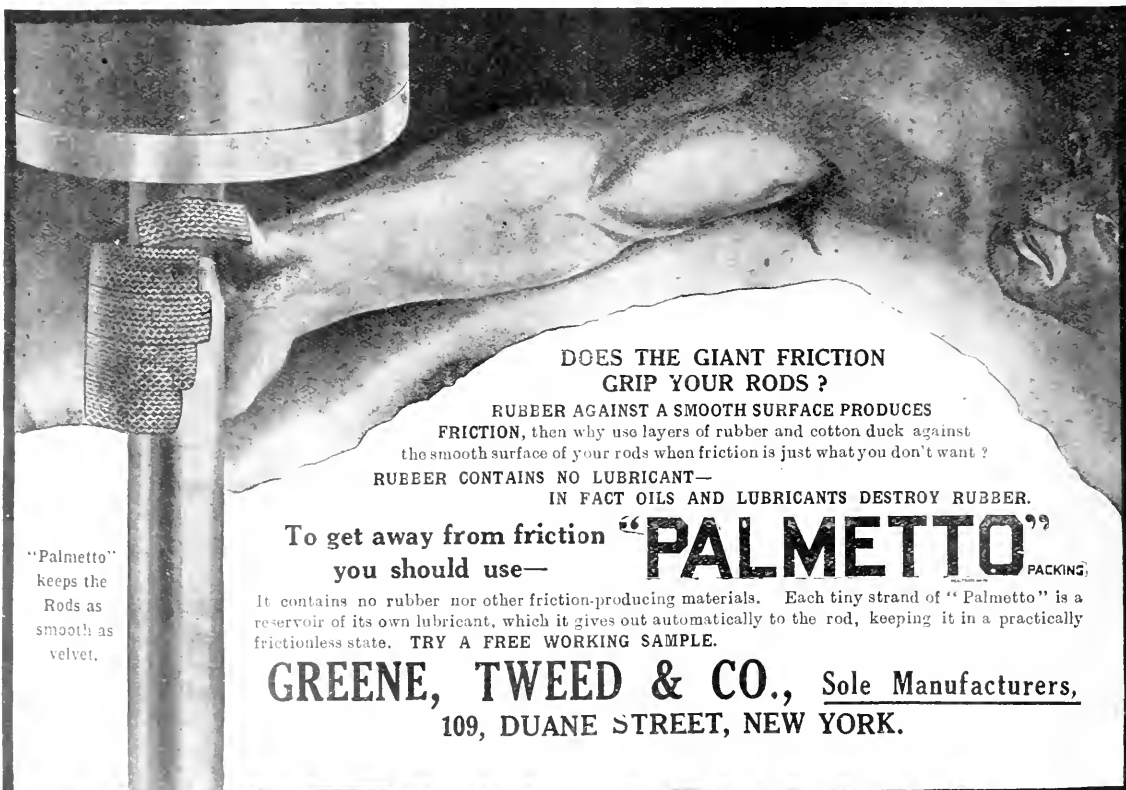
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be constructed to its full height, but the filtration plant, pumping plant and pipe lines were only to be large enough for dealing with 5 million gallons per day. The estimated cost of the modified scheme is £770,843, of which £716,201 is for engineering. The Extraordinary Water Court, after a lengthy investigation, holding sittings at Johannesburg, Vereeniging, Kimberley, Klerksdorp and Parys, delivered its judgment, and this having been considered favourable, it was decided to proceed with the scheme, but owing to the difficulty of obtaining machinery, etc., the only work in hand at present is the Barrage and a few buildings at Vereeniging. The Barrage is composed of 36 steel gates, each 30 feet wide and 25 feet high, which weigh about 23 tons each, and run on live rollers. The total length of the Barrage will be 1,356 feet and the concrete piers between the gates will be 8 feet in thickness.

### EXCAVATION.

The total quantity of excavation to be done at the Barrage is as follows:—

	Rock. Cu. Yds.	Earth. Cu. Yds.	Earth and Sand. Cu. Yds.
Transvaal Bank ...	71,645	34,710	—
Orange Free State Bank	38,355	—	187,290
	110,000	34,710	187,290

Grand total, ... 332,000 cubic yards.

Rock drills are used on the Transvaal bank, and these are driven by an air compressor capable of supplying 600 cu. ft. of free air per minute. The plant consists of a 125 h.p. Babcock and Wilcox water tube boiler and an Alley McLellan air compressor, delivering air at a pressure of 80 lbs. per square inch. On the Orange Free State bank the earth and sand are being removed by means of hydraulic sluicing. This plant consists of a 250 h.p. Babcock and Wilcox water tube boiler and one 200 h.p. Brammer vertical steam engine. A Sulzer centrifugal pump has also been installed, capable of raising 3,000,000 gallons of water per day against a head of 260 ft. and this water is discharged

through three monitors with jets of 1½ and 2 inches diameter. The engine and pump are installed in a pit about 20 ft. deep so as to reduce the suction head.

### PNEUMATIC CONCRETE MIXING AND PLACING PLANT.

The concrete required for the piers will be made in a closed mixer and forced by air pressure through a 4-inch pipe to its final position. The capacity of the plant will range from 15 to 20 cu. yds. per hour, according to the distance of discharge from the mixer. About 400 cu. ft. of free air is required for forcing the concrete through the pipes, and the pressure of the air at the entrance of the pipe will be 70 lbs. per square inch. The concrete mixer will be driven by a gasoline engine, and the compressed air will be obtained from the rock drill compressor plant. The foundations in the river bed are excellent and have been excavated to a maximum depth of 8 ft. for about one-half the width of the river. It was not absolutely necessary to excavate to the depth mentioned above, but I considered it desirable to prove the rock to see if the surface cracks penetrated to any distance. I therefore anticipate that it will not be necessary to excavate to a greater depth than four or five feet for the remaining portion of the foundations.

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35. John Graeme Balsillie.—Process and apparatus for assisting and promoting formation and deposition of aqueous particles in and from the atmosphere.
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37. John Graeme Balsillie.—Process and apparatus for procuring and stimulating rainfall.
38. Marks Harris and Edward Hart.—A metal bracket for joining wood to wood, primarily in the construction of bedsteads, settees and other articles of furniture.
39. Charles Edward Meyer.—Improvements in and relating to the treatment of zinc gold slimes and in apparatus for use in connection therewith.
40. Gogu Constantinesco and Walter Haddon.—Improvements in vaporisers for internal combustion engines.
41. Alexander Constantine Ionides.—Improvements in or relating to gaseous fuel furnaces.
42. Alexander Constantine Ionides and Sidney Victor Cooke.—Improvements in means for controlling electric fluids.

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## Company Meetings.

### \*LYDENBURG GOLD FARMS.

#### Neighbouring Developments.

The annual meeting of shareholders of the Lydenburg Gold Farms Co., Ltd., was held in the boardroom, Stock Exchange Buildings, on March 16, Mr. Richard Bowman presiding.

The Chairman, in moving the adoption of the balance sheet, statement of profit and directors' and auditors' reports for the year 1916, said shareholders would remember that at their last annual meeting he dealt fully with the position of the company and drew their attention to the valuable assets held in the two farms, Vlakfontein and Nooitgedacht, in the Heidelberg District, in the East Rand area. Since then further developments had taken place on the adjoining properties. For instance, to the north, the Daggafontein Gold Mining Company, Limited, was continuing development work, which, according to all accounts was proving satisfactory, whilst on the property of the Sub Nigel Gold Mining Company, Limited, which lies west and south-west of the Lydenburg Company farm Vlakfontein and almost adjoined same during the past 12 months. As many of them were no doubt aware, developments of the reef of a highly satisfactory nature had taken place. They would thus see that it was a fair, if not an obvious, inference to draw from the mining developments so close to the farm Vlakfontein that the same reef which was being worked and developed in the Daggafontein and Sub Nigel Mines traversed the farm Vlakfontein. Other work of a prospecting nature was being carried on on the farm Rietfontein to the immediate north of Vlakfontein by means of boring operations and recently on the farm Spaarwater it was said that the Van Ryn reef had been struck of a satisfactory width, but up to date the value of the reef had not been made known. It will, therefore, be seen that continued attention was being given to the development of properties adjoining and in the immediate vicinity of Vlakfontein, as a result of which the company was bound to benefit and all they have to do was to await the result of these developments. In all respects the position of the company was a highly satisfactory one. As appeared from the directors' report, during the year two of the company's farms had been disposed of at satisfactory prices and since the closing of the accounts a third farm had been disposed, also at a satisfactory price, and negotiations were in progress for the sale of another farm.

The report and accounts were adopted. Messrs. M. K. McLea and F. W. Baxter were re-elected directors, and Messrs. J. T. Goldsbury and G. R. Carpenter were reappointed auditors.

### RAND NUCLEUS G.M. CO.

Mr. E. J. Renaud presided over the annual meeting of the Rand Nucleus Gold Mining Co., Ltd., held on March 16, at the offices, 90, Exploration Buildings, Johannesburg, and in moving the adoption of the report and accounts, said: It will be seen from the accounts before you that the expenditure for the year 1916 has amounted to some £997, whilst the interest derived from the investment

of your cash resources, has yielded £978; the deficit for the year has thus amounted to the sum of £19 only. The £997 in-clude, in addition to claim licences and the usual administration charges, an expenditure of £7 15s. incurred in connection with the fencing of your two bore holes. Compared with the figures for 1915, the expenditure after allowing for the said outlay of £7 15s., which, being of a non-recurring nature, was not incurred in 1915, shows a decrease of some £30, which is due almost entirely to a decrease in the London expenses and to a reduction in the secretarial fees. I may state, in connection with this matter, that your directors have again during the year 1916 gone carefully into the question of administrative charges, and that they have decided upon certain reductions which, it is expected, will result in the equalisation of your annual expenditure with your annual revenue. Your property has undergone no change during the year under review. As was forecasted at your last annual general meeting, it has been impossible for your directors to bring forward for your consideration any proposals for the development of your mining property; neither is it likely that anything can be done until after the end of the war. This is regrettable, though unavoidable; at the same time, it is gratifying to know that our cash resources are not likely to shrink during this period of inactivity. I now beg to formally move the adoption of the report and accounts for the year ended the 31st December, 1916.

The motion was unanimously agreed to. The retiring directors (Messrs. E. J. Renaud and A. Gregor) were re-elected, as also was the auditor (Mr. H. G. L. Pauchaud).

### AFRICAN BOARD OF EXECUTORS.

The annual meeting of the shareholders of the African Board of Executors and Trust Company, Ltd., was held in Pretoria, on March 14. The Hon. Hugh Crawford presided and there were present the Hon. Johann Rissik, Sir Johannes van Boeschoten, Messrs. T. N. de Villiers, J. A. van der Byl, J. A. Battv, I. E. Stegmann, W. E. Wilson, J. R. Dyer, R. Baikie, C. Maggs, A. Johnston and R. L. O. Versfeld.

In moving the adoption of the report the Chairman said the business of the company has been well maintained and shows a slight improvement. Transactions in landed property are still very limited, and the revenue from our shipping agency is reduced to a minimum, owing to the war; the result for the year should therefore be considered satisfactory. The gross earnings have increased £415 and the net profit £370. It is recommended that this sum be appropriated to the reserve fund, the reduction of property and by the payment of a small bonus to the staff to meet the increased cost of living, no allowance having been granted, as is done by many institutions at present. The usual dividend of 25 per cent. is recommended. A reference to the balance sheet shows that there is a decrease of £7,282 in our deposits and current accounts, caused chiefly by withdrawals for investment in the Union Government Loan and Treasury Bills. On the other hand, the securities held for administration have increased by £11,243. On the assets side the cash shows a decrease of £2,159, but the balance is more than ample to meet our immediate requirements. The advances to estates and the loans on

mortgages are £25,342 less than last year, and owing to the paucity of applications for loans the sum of £1,500 has been invested in Government stock. The other items in the balance sheet do not call for remark. Last year we had four out of the five unmarried men on our staff on active service, two in German East Africa and two in Europe. The officers who served in East Africa have returned in good health and have resumed their duties. We are getting favourable reports from the two men now in Flanders and we hope they will also have the same good fortune. The securities of the company have as usual been examined by our solicitors and auditors and the securities held for clients have also been examined by our auditors and found in order. The appropriation of the balance of the profit and loss account recommended by your directors is set forth in their report which has been circulated to shareholders. I now move the adoption of the report, balance sheet and profit and loss account and the recommendation of directors as printed.

The report and accounts were adopted unanimously. The retiring directors, Messrs. Crawford and De Villiers, were re-elected, as were the auditors, Messrs. Baikie and Dougall.

The meeting concluded with the usual compliments to the staff and the chairman.

### MARAI-MOLYNEUX SYNDICATE.

The ordinary general meeting of shareholders was held on March 16, in the boardroom, the Jeppe Arcade. Mr. Julius Jeppe (chairman of the company) presided, and amongst those present and represented by proxy were: Messrs. Alfred Barker, O. F. Brotherton, Chudleigh Bros., J. P. H. Faure, E. M. Hind, Isaac Lewis, J. B. MacKinnlay, Senator Samuel Marks, A. C. Romyn, Corbett and MacKenzie, E. F. Bourke, A. W. Baker, Central Mining and Investment Corporation, Ltd., W. B. Beckett, E. F. Rooth, W. J. Haley, Geo. Falcet, J. R. Dyer, T. J. Mijndhardt, E. W. Smith, J. J. Marais, and Ernest Coote (secretary), representing in all 15,114 shares out of a total issued capital of 20,000 shares.

The Chairman said that the prospects had very much improved during the year.

Mr. Marais suggested that the time had come to liquidate the property.

Mr. J. H. Ryan considered that the development during the last few months justified the shareholders in keeping the property.

The Chairman was of the opinion that the expense would not warrant such a step. The directors were alive to the position of the company. An amount of £3,000 in the bank had been earmarked for the purpose of building a dam. During the last few weeks there had been deputations from the even holders in the township, who had assured the directors that the prospects had never been so bright. Ground leased in the vicinity promised to benefit from the development which was now taking place.

Mr. Haley said that to spend £3,000 on a dam was a hazardous business. He moved that the £3,000 in the Standard Bank should be invested in the local loan, which would yield 5 per cent. without income tax.

The motion was negatived by seven votes to six.

The report and accounts were adopted.

Messrs. J. Jeppe, J. R. Dyer, W. E. Wilson, Evelyn W. Smith, and J. H. Ryan were re-elected directors.

Messrs. Fraser and Mackenzie were re-appointed auditors.

**RHENOSTER MINES.**

The twelfth ordinary general meeting of shareholders was held in the Board Room, the Jeppe Arcade, Johannesburg, on March 16. Mr. Julius Jeppe (chairman of the Company, presided, and amongst those present and represented by proxy were: African Claim and Land Company, Limited, African Farms, Limited, Sir Abe Bailey, K.C.M.G., M.L.A., E. Coote, W. G. Davis, F. A. Dittmar, R. Hedding, E. M. Hind, E. H. Lamb, E. Molyneux, W. Nelson, D. O'Regan, G. B. Pascoe, John Hall Ryan, B. Southwell, and O. F. Brotherton (secretary), representing in all 481,635 shares out of a total issued capital of 495,000 shares.

The Chairman, in moving that the directors' report and accounts for the year ended the 31st December, 1916, be adopted, said: Gentlemen,—There are just one or two items in the balance sheet to which I would like to draw your attention before moving the adoption of the accounts. The issued capital of your company remains at £495,000. Reserve account for depreciation. This new account now appears in the balance sheet and has been credited to provide for any depreciation your directors find necessary to write off the shares to bring your shareholdings down to the market price as at the end of each financial year. Interest on loans amounted to £2,852 3s. 3d., and it is gratifying to notice that after providing £524 11s. 6d. for current expenses and £204 7s. 4d. Government Income Tax for the years 1915 and 1916, the profit and loss account shows a profit for the year of £2,123 4s. 5d. Cash account, with a balance of £82,528 9s 10d is an increase of £2,123 4s. 5d. over the previous year. Share investments, £30,796 1s. 6d., is the cost price of your shareholdings, which consist principally in shares in the Leeuwpoort (African Farms) Tin Mines, Ltd.; provision in the reserve for depreciation accounts before mentioned, has been made for depreciation in your shareholdings. With regard to your shareholdings in this Company I have pleasure in informing you that the company is doing very well.

The report and accounts were adopted. Mr. J. H. Ryan was re-elected to the directorate, and Mr. B. Southwell was elected in the place of Mr. Percy Greathead.

Mr. J. P. Ablett was reappointed auditor.

**MALVERN ESTATES.**

The twelfth ordinary general meeting of shareholders was held on March 16 in the board-room, the Jeppe Arcade, Commissioner Street, Johannesburg. Mr. Julius Jeppe, chairman of the company, presided, and amongst those present and represented by proxy were:—Messrs. Alfred Barker, J. A. Batty, O. F. Brotherton, J. Emrys Evans, C.M.G., R. Hedding, E. M. Hind, W. Nelson, John Hall Ryan, E. T. Somerset, B. Southwell, A. Woodrow, and Ernest Coote, secretary, representing in all 156,500 shares out of a total issued capital of 300,000 shares.

The Chairman said it had been agreed and confirmed by the shareholders, and it now only awaited the sanction of the Supreme Court, for the reduction of the present capital of £300,000 to £10,000; thereafter to be increased by £40,000 to £50,000. The company would make a fresh start free of any encumbrances, and the future looked brighter.

The report and accounts were adopted. Messrs. J. Jeppe and J. Emrys Evans, C.M.G., were re-elected directors.

Messrs. Alex. Aiken and Carter and L. B. Chesterton were reappointed auditors.

**EAST RAND DEEP.**

The eighth ordinary general meeting of shareholders was held in the board-room, the Jeppe Arcade, on March 16. Mr. Julius Jeppe, chairman of the company, presided, and amongst those present and represented by proxy were Messrs. C. T. Anderson, A. Barker, F. W. Baxter, J. M. Fisher, A. Gray, R. Hedding, E. M. Hind, Jarvis and Bain, F. R. Lynch, James Neilson, George Parkes, John Hall Ryan, John Stephen, and O. F. Brotherton, secretary, representing in all 166,208 shares out of a total issued capital of 500,000 shares.

The Chairman said that owing to the world war it was impossible to do anything with the claims, and in the meantime the interest on cash and investments more than paid all the ordinary expenditure. It had been deemed advisable to write £747 17s. 6d. off capital investments to bring them down to market price at the end of the financial year, and provision for that amount had been made in the reserve account for depreciation. The cash at £25,865 7s. 8d. was an increase on the previous year; it was on loan, bearing a good rate of interest and was well secured.

The report and accounts were adopted.

Mr. J. Andrew Cohen was re-elected to the directorate and M. B. Southall was elected in the place of Mr. Percy Greathead.

Mr. A. E. A. Williamson was reappointed auditor.

**GEYGERLE, LTD.**

The fifteenth ordinary general meeting of shareholders was held on March 16 in the board-room, the Jeppe Arcade. Mr. Julius Jeppe, chairman of the company, presided, and amongst those present and represented by proxy were Sir Abe Bailey, K.C.M.G., M.L.A., Messrs. J. L. Bergson and C. Pakeman, J. G. Curry, W. H. B. Frank, A. G. Gill, E. M. Hind, E. H. Lamb, F. R. Lynch, James Neilson, W. Nelson, John Hall Ryan, Bailey Southwell, W. S. Saunders, and O. F. Brotherton, secretary, representing in all 13,906 shares out of a total issued capital of 52,662 shares.

The report and accounts were adopted.

Mr. Julius Jeppe was re-elected to the directorate.

Messrs. Alex. Aiken and Carter were reappointed auditors.

**SUBURBAN TOWNSHIP CO.**

The fourteenth ordinary general meeting of shareholders was held on March 16 in the board-room, the Jeppe Arcade. Mr. Julius Jeppe, chairman of the company, presided, and amongst those present and represented by proxy were:—Sir Abe Bailey, K.C.M.G., M.L.A., Messrs. Alfred Barker, J. L. Bergson, O. F. Brotherton, W. H. B. Frank, A. G. Gill, R. Hedding, E. M. Hind, E. H. Lamb, E. Molyneux, John Hall Ryan, B. Southwell, A. Woodrow, and Ernest Coote, secretary, representing in all 18,780 shares, out of a total issued capital of 27,500 shares.

The report and accounts were adopted.

Mr. J. Jeppe and Sir Abe Bailey were re-elected directors.

Mr. F. W. Diamond was reappointed auditor.

**AFRICAN CLAIM AND LAND CO.**

The fifteenth ordinary general meeting of shareholders was held on March 16 in the board-room, the Jeppe Arcade. Mr. Julius Jeppe, Chairman of the Company, presided, and amongst those present and represented by proxy were: African Farms, Ltd., Sir Abe Bailey, K.C.M.G., M.L.A., Messrs. Alfred Barker, E. M. Hind, E. H. Lamb, E. Molyneux, W. Nelson, G. B. Pascoe, John Hall Ryan, B. Southwell, and O. F. Brotherton, secretary, representing in all 31,790 shares out of a total issued capital of 36,000 shares.

The Chairman reported that the Company's shareholdings, chiefly in the Rhenoster Mines, Ltd., had not altered during the year, and the expenses had been reduced to a minimum, being £150 18s. 3d., plus £59 7s. 6d. for interest on loan, or a total of £210 5s. 9d. for the year.

The report and accounts were adopted.

Messrs. Julius Jeppe, J. H. Ryan, Gordon Beves and B. Southwell were re-elected directors.

Messrs. C. L. Andersson and Company were reappointed auditors.

**RHODESIA AND UNION FARMS AND MINES.**

The fourth ordinary general meeting of shareholders was held on March 16 in the board-room, the Jeppe Arcade. Mr. Julius Jeppe, chairman of the company, presided, and amongst those present and represented by proxy were:—Sir Abe Bailey, K.C.M.G., M.L.A., Messrs. Alfred Barker, J. S. Brown, R. Hedding, E. M. Hind, E. H. Lamb, E. Molyneux, W. Nelson, D. O'Regan, John Hall Ryan, R. M. Saunders, B. Southwell, A. Woodrow, and O. F. Brotherton, secretary, representing all the issued capital of 269,000 shares.

The Chairman said that the capital of £67,250 remained unaltered and the 23 farms, 100,735.53 acres in extent, were the same as at the last meeting. The cash balance, £22,721 2s. 11d. was on loan and the interest earned more than paid all the expenses.

The report and accounts were adopted.

Messrs. Julius Jeppe and E. M. Hind were re-elected directors.

Mr. A. E. A. Williamson was reappointed auditor.

**PRETORIA TOWNSHIPS.**

The eighth ordinary general meeting of shareholders was held on March 16 in the board-room, the Jeppe Arcade. Mr. Julius Jeppe, chairman of the company, presided, and amongst those present and represented by proxy were:—African Farms, Ltd., Sir Abe Bailey, K.C.M.G., M.L.A., Alfred Barker, W. E. Drummond, R. Hedding, E. M. Hind, E. H. Lamb, W. Nelson, G. B. Pascoe, John Hall Ryan, B. Southwell, Witwatersrand Township, Estate and Finance Corporation, Limited, and Ernest Coote, secretary, representing in all 462,100 shares out of a total issued capital of 500,000 shares.

The report and accounts were adopted.

Messrs. Julius Jeppe and E. M. Hind were re-elected directors.

Mr. Fred Lince was reappointed auditor.

### DIEPKLOOF MYNPACHT CLAIM AND ESTATE CO.

The Directors of the Company met on 15th March 1917 at the Boardroom, 115, Jeppe Arcade. Mr. John Jeppe, Chairman of the company, presided, and those present and represented by proxy were: African Farms Ltd., Sir George Albu, Bart., Messrs. Alfred Barker, W. H. B. Frank, Arthur Lee, A. G. Gill, W. P. Grimmer, R. Heald, F. Holloway, A. Holloway, E. H. Lamb, John Hall Ryan, R. Southwell, H. de A. Steyler,

and O. F. Brotherton, Secretary, representing in all 24,500 shares out of a total issued capital of 242,500 shares.

#### The Chairman's Speech.

The Chairman said: There are just one or two items in the balance sheet to which I would like to draw your attention before moving the adoption of the accounts. There has been no alteration in your capital or the property held by your company. The eucalyptus plantation, numbering nearly 120,000 trees, is making good progress, the undergrowth of the larger trees has been re-

moved and the present good season will be reflected in the growth of the trees; the small sum of £105 2s. 7d. showing in the accounts for tree plantation is the actual cash outlay only, no charge having been made for services rendered in the plantation in lieu of rent for the balance of the farm. The expenses for the year, £217 11s. 10d., includes £75 for mynpacht rent and must therefore be considered as most moderate.

The report and accounts were adopted.

Mr. J. H. Ryan and Sir George Albu, Bart., were re-elected directors.

Mr. Henry Hauns was reappointed auditor.

### New Companies.

- 576 J. Coleman, Ltd., Goodman's Buildings, Springs; capital £300.
- 5077 Midlats Oxides, Ltd., 376, Church Street, Pretoria; capital, £2,000.
- 578 Guthrie & Son, Ltd., 33 Alexander Street, Johannesburg; capital £1,000.
- 5079 Takodi, Ltd., Offices of Messrs. Slade and Oosthuizen, Carmichael Street, Ventersdorp; capital £1,000.
- 5080 The Industrial Development Company, Limited, 1, National Bank Buildings, Summerville Street, Johannesburg; capital, £100,000.
- 5082 Ethel Syndicate, Limited, 57, Exploration Buildings, Commissioner Street, Johannesburg; capital, £5,000.
- 5083 African Dairies, Limited, 150, Pritchard Street, Johannesburg; capital, £1,000.
- 5084 N.Z.L.K. Dayabhai and Company, Limited, 12, Rosenberg Arcade, 58, Market Street, Johannesburg; capital, £2,000.
- 5085 The Rustenburg Estate, Limited, 31-35, National Mutual Buildings, cor. Rissak and Market Streets, Johannesburg; capital, £2,000.
- 5086 Burlington Mansions, Limited, Grosvenor Chambers, 36a, Loveday Street, Johannesburg; capital, £2,000.
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### Declaration of Dividend No. 22.

A Dividend of 5 per cent. (1s. per share) has been declared by the Board for the period ending 31st March, 1917, payable to Shareholders registered in the books of the Company at the close of business on 31st March, 1917, and to holders of Coupon No. 22 attached to Share Warrants.

The Transfer Books will be closed from the 1st to 7th April, 1917, both days inclusive.

It is intended to post the Warrants in payment of this Dividend on or about the 5th May, 1917, but irregularity in the Mail Service may render it necessary to defer the posting by one or even possibly two weeks. Those despatched from the London Office to persons resident in the United Kingdom will be subject to a deduction of English Income Tax.

Coupon No. 22 attached to Share Warrants will be payable on or after 7th May, 1917, at the London Office of the Company. Coupons must be deposited Four Clear Days before being paid, and unless accompanied by Inland Revenue Declarations, they will be subject to a deduction of English Income Tax.

By Order of the Board,

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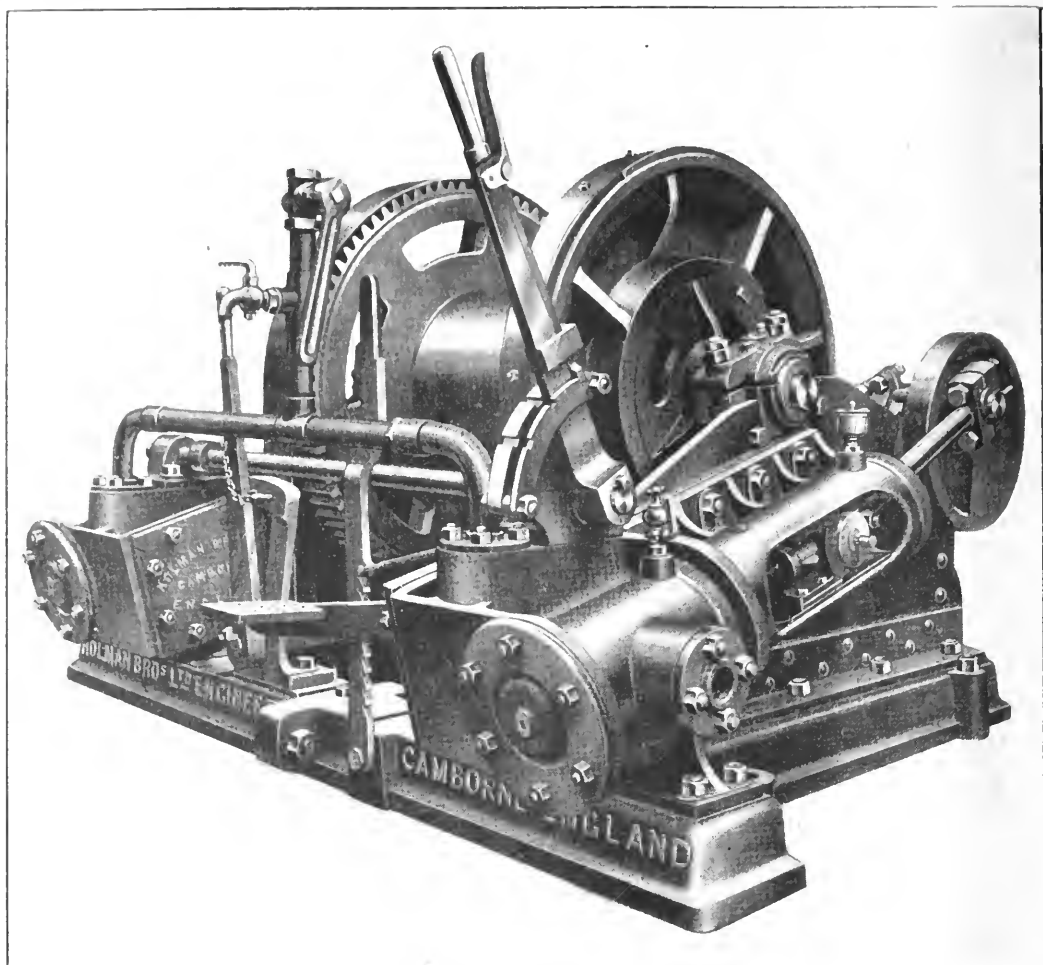


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